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UNIVERSITY OF ALBERTA

VALIDATION OF THE MILLER BEHAVIORAL STYLE SCALE

BY

CAROLYN J.M. ROSS ©

A DISSERTATION SUBMITTED TO THE FACULTY OF GRADUATE
STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE
REQUIREMENTS OF THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN
EDUCATIONAL PSYCHOLOGY

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Dear Carolyn,

I am glad to hear all is going well. This is to inform you that I grant you permission to utilize the MBSS scale and the adaptation of the table from JPSP in your thesis. I hope all goes well. Best wishes.

Sincerely,

S. Miller

Suzanne M. Miller, Ph.D.
Professor of
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled VALIDATION OF THE MILLER BEHAVIORAL STYLE SCALE submitted by CAROLYN JEAN MARY ROSS in partial fulfilment of the requirements for the degree of DOCTOR OF PHILOSOPHY in EDUCATIONAL PSYCHOLOGY.

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DEDICATION

To my father, David H. Ross.

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I am indebted to a number of people who were willing to share their skill, knowledge, and time with me during the research process. The members of my thesis committee provided me with guidance through each stage of the research project. Included among those who served on my thesis committee were Dr. T.O. Maguire, who acted as my chairperson, Dr. T. Davis, and Dr. T. Rogers. I also wish to extend my gratitude to Dr. G. Laing, Dr. B. Paulson, Dr. J. Hogg, and Dr. J. Osborne who offered support and useful suggestions. In addition to my committee members I wish to extend a special thanks to Dr. S.M. Miller who graciously granted me permission to use her scale, the Miller Behavioral Style Scale, in my study.

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ABSTRACT

The Miller Behavioral Style Scale (MBSS) was designed to identify the individual's cognitive informational style (CIS) based on self-reported preferences for information seeking strategies (monitoring) and distraction (blunting) in 4 hypothetical stress-evoking situations. The MBSS may have implications in terms of guiding nursing practice in the future. The identification of the patient's CIS may lead to a better match between nursing interventions and the informational needs of the patient awaiting threatening procedures. Unfortunately, the validity evidence of the MBSS is limited. The present study was undertaken to further extend and evaluate the validity evidence of the MBSS.

A critical analysis of the following was integrated to formulate an evaluative judgement of the degree of validity of the MBSS: i) theoretical underpinnings of the MBSS, ii) content and scoring model of the MBSS, iii) previous work using the MBSS, and iii) new empirical evidence generated in this research.

Five substudies were designed to develop appropriate tools and to examine aspects of the substantive, structural, and external validity of the MBSS. In Substudy I the MBSS was administered to 271 university students to examine the structure of the MBSS. Substudies II to IV were undertaken

to develop and test a new set of 8 hypothetical stress-evoking situations. Using a subsample of 60 of the 271 students, interview responses to the 8 new situations and 1 of the MBSS situations were examined in Substudy V.

Overall the validity evidence is weak. A major inconsistency between the underlying theory and the MBSS concerns the dimensionality of CIS. A lack of strong predictive validity evidence may in part be due to a lack of consistency in MBSS scoring models used among researchers. A lack of strong structural validity evidence may in part be due to a number of problematic items in the MBSS. Only the scores on distracting (blunting) in the MBSS were positively related to the scores on distracting in the interview data. However, content analysis of the interview data indicate that the broader concept of blunting may be underrepresented in the MBSS. Furthermore, the structural approach used in the MBSS may be inappropriate given that coping with threat appears to be a process.

TABLE OF CONTENTS

Chapter Page

I. INTRODUCTION 1

Background 1

Statement of the Purpose.......................... 4

Theoretical Framework............................. 4

Limitations of the Study.......................... 5

Definitions of Terms.............................. 7

Organization of the Chapters...................... 9

II. MILLER'S SCALE AND THE UNDERLYING HYPOTHESES...... 11

The Miller Behavioral Style Scale................ 11

Structure.................................... 11

Scoring and Projected Use of the MBSS......... 16

Miller's Hypotheses.............................. 18

The Minimax Hypothesis....................... 18

The Monitoring and Blunting Hypothesis....... 21

Predictions Based on the Monitoring and Blunting Hypothesis.................................. 26

Logical Consistency of Miller's Hypotheses and Scale.. 28

Cognitive Informational Style............... 28

Inconsistency in Terminology............... 28

Vagueness in the Definition of Cognitive Informational Style........................ 31

Dimensionality of Cognitive Informational Style.................................... 32

Chapter Page

Coping.................................... 33

Control................................... 34

Predictions Based on the Monitoring and Blunting Hypothesis.......................... 35

Summary and Conclusions......................... 36

III. EVIDENTIAL VALIDITY EVIDENCE..................... 37

Historical Background.......................... 37

Summary................................... 41

Content Relevance and Representativeness of Miller's Scale............................... 41

Content Relevance of the Situations.......... 42

Content Relevance of the Items............... 44

Representativeness of the Situations......... 45

Representativeness of the Items.............. 48

Summary of Recommendations for Future Study... 49

Internal Structure of Miller's Scale........... 50

Relationships of Items Among the Situations... 50

Internal Consistency...................... 50

Correlations Between Monitoring and Blunting Subscales................................ 53

Item Response Rates Across Situations........ 54

Summary of Recommendations for Future Study... 57

External Structure.............................. 59

Convergent Validity Evidence................. 59

Chapter Page

Relationships Between the MBSS and Other Instruments................................ 59
  Locus of Control.......................... 59
  Monitoring and Problem-focused Coping..... 60
  Monitoring and Emotion-focused Coping..... 63
  Blunting and Emotion-focused Coping....... 64
  Conclusions and Directions................ 65
Evidence of Predictive Validity of the MBSS... 66
 Coping Behavior in Threatening Situations... 67
  Conclusions and Directions................ 71
 Knowledge Level and Satisfaction............ 72
  Conclusions and Directions................ 75
 Arousal Responses to Stressful Events....... 76
  Conclusions and Directions................ 82
 Interacting Effects of CIS and Situational Conditions................................. 87
  Conclusions and Directions................ 92
 Impact and Outcome of Stressful Events...... 94
  Conclusions and Directions................ 100
 Health Care Behavior........................ 101
  Conclusions and directions................ 103
Divergent Validity Evidence.................. 103
 Trait Anxiety............................... 103
 Social Desirability......................... 104
 Repression-Sensitization Scale.............. 105

Chapter Page

Depression.................................. 106

Type A Behavior............................. 106

Demographic Variables....................... 107

Summary, Conclusions, and Directions Based on the Literature 109

Research Questions............................. 113

IV. SUBSTUDY I...................................... 114

Purpose of Substudy I.......................... 114

Method... 114

Population and Sample........................ 114

Measures..................................... 115

Miller Behavioral Style Scale.............. 115

General Information Form................... 116

Procedures................................... 116

Data Preparation and Analysis................ 118

Ethical Considerations....................... 119

Results.. 120

Sample....................................... 120

Evaluation of the Scoring Model and Structure of the MBSS 124

Cognitive Informational Style Categories and the MBSS Scoring Model..................... 124

The Structure of the Miller Behavioral Style Scale.................................... 127

Item Response Frequencies................ 127

Chapter Page

Item Correlations........................ 135

Situation by Strategy Correlations........ 141

Confirmatory Factor Analysis............. 143

Exploratory Factor Analysis............... 143

Relations Between MBSS and Demographic Variables................................ 149

Conclusions and Directions Based on 149

Substudy I................................... 149

V. SUBSTUDY II..................................... 151

Purpose of Substudy II........................ 151

Method... 151

Sample... 151

Procedures.................................... 152

Results.. 156

Sample... 156

Newly Constructed Threat Situations.......... 156

VI. SUBSTUDY III.................................... 160

Purpose of Substudy III....................... 160

Method... 160

Sample... 160

Measures...................................... 161

Procedures.................................... 162

Data Preparation and Analysis................ 163

Selection Criteria............................ 163

Results.. 164

Chapter Page

Sample.................................... 164

The Evaluation of the New Situations.......... 166

Evaluation of Miller's Situations............. 168

Directions Based on Substudy III.............. 169

VII. SUBSTUDY IV.................................. 171

Purpose of Substudy I......................... 171

Method.. 171

Sample.. 171

Measures...................................... 172

Procedures.................................... 175

Data Analysis................................. 177

Results....................................... 178

Sample.. 178

Procedural Problems Encountered and Resulting Revisions..................................... 181

Identifying Coping Strategies in the Transcripts................................... 184

Directions Based on Substudy IV............... 184

VIII. SUBSTUDY V................................. 185

Purpose of Substudy V......................... 185

Method.. 185

Sample.. 185

Measures...................................... 186

Procedures.................................... 187

Data Preparation and Analysis................. 189

Chapter Page

Results 191

Sample 191

Test-retest Coefficients.................... 196

Inter-rater Reliability..................... 200

Response Frequencies in the Interview Data.... 201

Comparison of Interview Scores with MBSS Retest Scores.................................... 203

Miller's Situations......................... 203

Situations from the Task.................... 206

Comparison of Scores on the Task with the Initial MBSS Scores.......................... 209

Limitations................................. 210

Summary and Conclusions Based on Comparisons of Task and MBSS Scores......................... 210

Subjective Interpretation of the Interviews... 211

Monitoring Responses to the New Situations in the Interviews.......................... 212

Blunting Responses to the New Situations in the Interviews.......................... 214

Other Responses to the New Situations in the Interviews.......................... 215

Summary and Directions Based on the responses to the New Situations..................... 217

Interview Responses to Miller's Situations.. 219

Dentist Situation........................ 221

Chapter Page

Hostage Situation........................ 224

Layoff Situation......................... 226

Airplane Situation....................... 229

Summary and Directions................... 231

Other Findings............................ 233

Discussion and Direction Based on Findings.... 239

IX. CONCLUSIONS AND IMPLICATIONS.................... 243

Inconsistency Between Theory and Scoring Model.. 243

Content Relevance and Representativeness........ 246

Structure of the MBSS........................... 249

Scoring Model................................ 249

Structure of the MBSS........................ 251

External Structure........................... 252

Convergent Validity Evidence............... 252

Predictive Validity Evidence............... 253

Divergent Validity Evidence................ 254

An Evaluative Judgment.......................... 254

REFERENCES.. 256

TABLES

Table Page

1. The Miller Behavioral Style Scale................. 12

2. Summary of the Situational Characteristics of the Miller Behavioral Style Scale..................... 47

3. Reported Means, Standard Deviations, and Internal Consistencies for the Monitoring and Blunting Subscales....................................... 51

4. Mean Response Rates for Monitoring and Blunting by Situations Reported in Two Studies............. 55

5. Cope Subscales................................... 62

6. Comparisons of MBSS Scores with Measures of Arousal... 84

7. Summer Session Classes........................... 121

8. Demographic Characteristics of the MBSS Group..... 123

9. Cognitive Informational Style Categories Represented by MBSS Scores of the Sample in Substudy I..................................... 126

10. Response Frequencies for Monitoring Items......... 128

11. Response Frequencies for Blunting Items........... 130

12. Totals, Means, and Standard Deviations for Monitoring and Blunting by Situations............. 135

13. Correlations Between Monitoring Items............. 138

14. Correlations Between Blunting Items.............. 139

Table Page

15. Correlations Between Monitoring and Blunting Items.................................... 140

16. Correlation Matrix of Total Monitoring and Blunting Scores by Situations.................... 142

17. Pattern Matrix for a Four Factor Solution Using Principal Component Factor Analysis with an Oblique Transformation.............................. 146

18. Factor Correlation Matrix.......................... 147

19. Residuals between the Observed and Reproduced Correlation Matrixes............................. 148

20. Instructions for the Construction of Threat Situations.. 155

21. Pool of Threatening Situations..................... 158

22. Fall Classes....................................... 164

23. Demographic Characteristics of the Sample in Substudy III...................................... 165

24. Situational Characteristics........................ 167

25. Semi-structured Interview Guide.................... 173

26. Criteria for Identifying Coping Strategies........ 175

27. Cognitive Informational Style Categories of Volunteers for Follow Up Interviews.............. 179

28. Characteristics of the Sample in Substudy IV...... 181

29. Revised Semi-structured Interview Guide........... 183

30. Demographic Characteristics of Each Member of the Distinct Group................................. 192

Table Page

31. Summary of Demographic Characteristics of the Distinct Group.................................. 194

32. Comparisons of MBSS Scores Tested on Two Occasions...................................... 197

33. Assignment to Cognitive Informational Style Categories Based on Scores on the Initial MBSS and the MBSS Retest................................ 199

34. Percent of Agreement in the Transcript Interpretations................................ 201

35. Frequencies for Monitoring and Blunting in the Situations Discussed in the Interviews........... 203

36. Comparisons of Monitoring and Blunting in the MBSS Retest with Interviews Using Miller's Situations.. 205

37. Comparison and Contrast of Monitoring and Blunting in the MBSS Retest and the Task.................. 207

38. Strategies Identified in the Interview Responses to Miller's Situations............................ 220

APPENDIXES

Appendix Page

A. Definitions.. 265

B. Instructional Package: MBSS Group.................. 269

C. Instructional Package: Situation Development....... 273

D. Instructional Package: Task Evaluation............. 275

E. Interview Responses: Elevator Situation............ 281

F. Interview Responses: Dentist Situation............. 292

G. Interview Responses: Hostage Situation............. 295

H. Interview Responses: Layoff Situation.............. 299

I. Interview Responses: Airplane Situation............ 303

CHAPTER I

INTRODUCTION

Background

Larrivee (1990) defines invasive medical procedures as "operative or diagnostic techniques which necessitate the penetration of tissue and/or the intrusion of a body orifice" (p. 1). Invasive medical procedures encompass measures to establish diagnosis and or to provide therapy. The prospect of undergoing an invasive medical procedure is met with some level of anxiety surrounding anticipated discomfort and concerns pertaining to associated risks or possible prognostic implications (Ludwick-Rosenthal & Neufeld, 1988; Shipley, Butt, Horwitz, & Farbry, 1978).

The anxiety associated with invasive medical procedures is thought to have important clinical implications. Excessive levels of anticipatory anxiety have been associated with increased severity of symptoms and use of medications during and following the procedure as well as prolonged recovery (e.g., George, Scott, Turner, & Gregg, 1980; Ray & Fitzgibbon, 1981; VanDalfsen & Syrjala, 1990; Williams, Jones, Workhoven, & Williams, 1975).

The observed relationship between anticipatory anxiety and outcome has spurred the development of nursing interventions designed to reduce anticipatory anxiety. One cognitive technique is to provide information. However, despite decades of research and theorizing on the role of information in the reduction of anticipatory anxiety in the health care setting, little consensus exists as to the benefits of this intervention (Ludwick-Rosenthal & Neufeld, 1988; Schultheis, Peterson, & Selby, 1987). There are research findings that indicate some individuals may experience a reduction in anxiety when provided with information (e.g., Kendall, Williams, Pechacek, Graham, Shisslak, & Herzoff, 1979; Ridgeway & Mathews, 1982). Other research findings indicate some individuals may become more anxious or experience no effect on anxiety levels when provided with information (e.g., Auerbach, Kendall, Cuttler, & Levitt, 1976; Vernon & Bigelow, 1974).

In part, inconsistencies in research findings may be attributed to approaches to measurement based on the tradition of animal experimentation or the tradition of ego psychology (Lazarus & Folkman, 1984). The former tradition focuses on the situation as a determinant of behavior to the exclusion of possible person factors. The latter tradition focuses on the person as the determinant of behavior to the exclusion of situational influences.

In the late 70's Miller (1988b) introduced the 'monitoring and blunting' hypothesis to account for the discrepant findings in research mentioned above. Her hypothesis represents a contemporary transactional approach which takes into account the role of both the situation and the person by situation interaction in determining behavior. Compared to the traditional views, Miller’s hypothesis provides a better account for the inconsistencies in the research mentioned above. In her hypothesis, Miller spells out when information is preferred and when information is not preferred. Further Miller spells out when the acquisition of threat-relevant information is arousal reducing and when it is arousal inducing. Person factors and their interaction with the situation have been shown to explain more variance than situation factors alone (McCrae, 1989).

Based on her hypothesis, Miller (1979b) developed the Miller Behavioral Style Scale (MBSS) to identify individuals who may benefit from information (monitors) and individuals who may not (blunters), given different threatening situations. The particular person factor identified using the MBSS is referred to as a cognitive informational style.

If Miller is correct, the MBSS may have implications in terms of directing nursing practice in the future. The identification of a patient’s cognitive informational style may lead to a better match between patient and nursing interventions. For example, a nurse dealing with a monitor patient prior to a cardiac catheterization might be advised to describe the technique and sensations that will occur during the invasive medical procedure. For blunters, the nurse might provide instruction on the use of a variety of relaxation techniques.

Statement of the Purpose

The MBSS may be a useful tool to facilitate investigations of the efficacy of nursing interventions designed to prepare patients for invasive medical procedures. However, the validity evidence to support the adequacy and appropriateness of inferences and actions drawn from MBSS scores is limited. The purpose of this research was to extend and evaluate the validity evidence of the MBSS. According to Messick (1989) "validity is a matter of degree, not all or none" (p. 13). To determine the degree of validity requires an integrated evaluative judgment of the empirical evidence and the theoretical rationales. It is toward this end that the present study is directed.

Theoretical Framework

This work provides an integrated evaluative judgment of the validity of the MBSS using Messick's (1989) notion of construct validity as an organizing framework. Messick (1989) suggests that there are three components of construct validity: substantive, structural, and external. Content relevance and representativeness pertain to the substantive component of construct validity (Loevinger, 1957; Messick, 1989). Structural validity concerns the extent to which response consistency reflects the theoretical relations among components of the person factor of interest. Thus for example, the structural component of construct validity addresses the extent to which the scoring model is congruent with the structural characteristics of the nontest manifestations of the construct. Finally, the external component of construct validity refers to the "extent to which the test's relationships with other tests and nontest behaviors reflect the expected high, low, and interactive relations implied in the theory of the construct being assessed" (Messick, 1989, p 45).

Validity evidence incorporates an evaluation of theoretical and empirical evidence. Therefore, a critical analysis of Miller's hypothesis and scale in addition to a literature review to extract the empirical evidence collected to date are part of the data that were integrated and evaluated. Also, new experimental evidence is brought forward to bear on the evaluative judgment of the validity of the MBSS.

Limitations of the Study

In keeping with Miller's work in the validation of the MBSS, the target population for the research was university students enroled in undergraduate courses. Selecting a sample with similar characteristics to Miller's sample increased the extent to which the findings in this study could be compared to the results of Miller's work. Perhaps in universities there is a tendency to reinforce abilities to make subtle distinctions and respond accordingly. Respondents from a more general population may be less inclined to discriminate amongst the variations of hypothetical situations.

The literature review was limited to theoretical and empirical works in which the MBSS was used. Articles were identified by computer and manual searches. Search sources were: Computerized Index of Nursing and Allied Health Literature, The International Nursing Index, the Cumulative Index Medicus, The Social Science Citation Index, The Educational Resources Information Center, and Psychological Abstracts. It is recognized that limiting reviews to published data may exclude important evidence that may bear on the validity of the MBSS. Since non significant research findings in general are not published, an exclusion of this source may bias the judgment favoring the strength of validity evidence.

Definitions of Terms

Key definitions are presented here. A more extensive list of definitions is provided in Appendix A.

Arousal: a dimension of activity or readiness for activity based on the level of sensory excitability (Reber, 1985). Miller (1979a) suggests that physiological, subjective, and behavioral responses may be used to indicate the extent of arousal. Physiological responses such as skin conductance [tonic and phasic (specific and nonspecific) responses] and heart rate may be used to measure arousal. A subjective response used to reflect arousal is self-report ratings of anxiety and tension. Behavioral responses used to measure arousal are hand clenching, crying, and screaming out (Miller & Mangan, 1983).

Blunting: the extent to which an individual cognitively avoids or transforms threat-relevant information using strategies such as distraction, reinterpretation, relaxation, denial, intellectualization, and calming self-talk (Miller, 1988b). Miller determines the extent of blunting by examining the number of distraction/avoiding strategies used: avoiding cognition (e.g. sleeping), talking to others about something else, putting mind off of it by engaging in activities, or thinking about something else.

Cognitive Informational Style: the extent to which the individual chooses to monitor and/or blunt in a threatening situation (Miller, 1988b).

Control: the ability to make some response which in some way will modify harmful, threatening environmental conditions. The response may be active or passive. Active responses would include those that mitigate the impact of the threat by decreasing the intensity or changing the probability of the event. Passive responses would include physical escape or avoidance. Potential control: refers to a variant of instrumental control. Individuals believe that they are exerting some control over the threatening event, but objectively they are not (Miller, 1979a).

Coping: constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984).

Monitoring: the extent to which the individual is alert for and sensitized to threat-relevant information (Miller, 1988b, p.7). Miller determines the extent of monitoring by examining the number amount of threat-relevant information seeking behavior strategies used such as reading, recalling past experience, and asking others about threat relevant information

Predictability: the extent to which one can know something about the threat situation, whether or not one can do something to modify harmful environmental conditions (Miller, 1980a, p. 146).

Stress: a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being (Lazarus & Folkman, 1984, p. 19).

Threat: a variant of stress concerning harm or losses that have not yet taken place but are anticipated (Lazarus & Folkman, 1984, p. 32)

Threat intensity: determined by the probability, level, duration, and imminence of threat. Threat intensity is increased as the probability and level increase, the duration is lengthened, and threat is more imminent (Miller, 1988b).

Organization of the Chapters

Chapter II provides a description of the MBSS and the suggested scoring procedures. This is followed by a description of the monitoring and blunting hypothesis and the minimax hypothesis which supplements the former hypothesis. The chapter ends with a critique focusing on the clarity and conciseness of the monitoring and blunting hypothesis. Also included is a discussion of the internal consistency among and between the monitoring and blunting hypothesis, the MBSS, and the scoring system.

Chapter III presents a historical overview of the theoretical views of behavior in threat. This is followed by the presentation of structural and external validity evidence found in the research literature. A summary of the literature review is integrated with the substantive findings derived from the historical overview and the findings in Chapter II. Important gaps in the validity evidence are identified and research questions are formulated based on these gaps.

Five substudies designed to address the research questions are presented in Chapters IV to VIII. Within each substudy the purpose, method, results, limitations, conclusions, and directions for future research are put forward. Since each subsequent substudy relates to the previous substudy, the conclusions also provide a bridge to the next chapter where appropriate.

In Chapter IX the findings from Chapters II to VIII are drawn together and integrated to formulate an evaluative judgment of the validity of the MBSS.

Given the length and complexity of the text, many chapters include an introductory paragraph to remind the reader of the organization.

CHAPTER II

MILLER'S SCALE AND THE UNDERLYING HYPOTHESES

The Miller Behavioral Style Scale (MBSS), the scoring models, and projected use of the scale are described. This is followed by a presentation of Miller's hypotheses and key predictions based on her hypotheses. Finally, a critique of the logical consistency of these components of Miller's work is put forward.

The Miller Behavioral Style Scale

Structure

The MBSS, presented in Table 1, consists of 4 hypothetical threatening situations of an uncontrollable nature (Miller, 1988b). Each situation is followed by 8 items which describe different coping strategies that might be undertaken given the situation. Half of the strategies represent threat-relevant information-seeking strategies which Miller refers to as monitoring strategies. The remainder of the items represent threat-relevant information-avoiding strategies which Miller refers to as blunting strategies. The two different categories of coping strategies (i.e., monitoring and blunting) are presented under each situation in random order. Items 1, 4, 6, 7, 10, 12, 13, 16, 17, 18, 20, 23, 25, 28, 30, and 31 represent monitoring strategies. Items 2, 3, 5, 8, 9, 11, 14, 15, 19, 21, 22, 24, 26, 27, 29, and 32 represent blunting strategies.

Table 1

The Miller Behavioral Style Scale

I. "Vividly imagine that you are afraid of the dentist and have to get some dental work done."

Which of the following would you do?

Check all of the statements that might apply to you.

1. ___ I would ask the dentist exactly what he was going to do.

2. ___ I would take a tranquillizer or have a drink before going.

3. ___ I would try to think about pleasant memories.

4. ___ I would want the dentist to tell me when I would feel pain.

5. ___ I would try to sleep.

6. ___ I would watch all of the dentist's movements and listen for the sound of his drill.

7. ___ I would watch the flow of water from my mouth to see if it contained blood.

8. ___ I would do mental puzzles in my mind.

(Table continues)

Table 1 (continued)

The Miller Behavioral Style Scale

II. "Vividly imagine that you are being held hostage by a group of armed terrorists in a public building."

Which of the following would you do?

Check all statements that might apply to you.

9. ___ I would sit by myself and have as many daydreams and fantasies as I could.

10. ___ I would stay alert and try to keep myself from falling asleep.

11. ___ I would exchange life stories with other hostages.

12. ___ If there were a radio present, I would stay near it and listen to the bulletins about what the police are doing.

13. ___ I would watch every movement of my captors and keep an eye on their weapons.

14. ___ I would try to sleep as much as possible.

15. ___ I would think about how nice it is going to be when I get home.

16. ___ I would make sure I knew where any possible exits were.

(Table continues)

Table 1 (continued)

The Miller Behavioral Style Scale

III. "Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about layoffs has been made and will be announced in several days.

Which of the following would you do?

Check all of the statements that might apply to you.

17. ___ I would talk to my fellow workers to see if they knew anything about what the supervisor's evaluation of me said.

18. ___ I would review the list of my duties of my present job and try to figure out if I had fulfilled them all.

19. ___ I would go to the movies to take my mind off of things.

20. ___ I would try to remember any argument or disagreement I might have had with my supervisor that might have lowered his opinion of me.

21. ___ I would push all thought of being laid off out of my mind.

22. ___ I would tell my spouse that I would rather not discuss my chances of being laid off.

23. ___ I would try to think which employee in my department the supervisor might have thought had done the worst job.

24. ___ I would continue doing my work as if nothing special was happening.

(Table continues)

Table 1 (continued)

The Miller Behavioral Style Scale

IV. "Vividly imagine that you are on an airplane, 30 minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced that all is well"

Which of the following would you do?

Check all of the statements that might apply to you.

25. ___ I would carefully read the information provided about safety features in the airplane and try to make sure I knew where the emergency exits were.

26. ___ I would make small-talk with the passenger beside me.

27. ___ I would watch the end of the in-flight movie, even if I had seen it before.

28. ___ I would call for the stewardess and ask her exactly what the problem was.

29. ___ I would order a drink or tranquillizer from the stewardess.

30. ___ I would listen carefully to the engines for unusual sounds and would watch the crew to see if their behavior was out of the ordinary.

31. ___ I would talk to the person beside me about what might be wrong.

32. ___ I would settle down and read a book or magazine or write a letter.

Scoring and Projected Use of the MBSS

Given each of the threat situations in the MBSS, respondents are requested to check all of the statements that might apply to them. Three scores may be obtained from the MBSS (Miller, 1992). The monitoring score is the sum of all the monitoring strategies that are endorsed. The possible range of monitoring scores is 0 to 16. Respondents who score at or above a cut-off score (discussed below) are categorized as high monitors, and the remainder are categorized as low monitors. The blunting score is the sum of all the blunting strategies that are endorsed. The possible range of blunting scores is also 0 to 16. Respondents who score at or above a cut-off score are categorized as high blunters, and the remainder are categorized as low blunters. The difference score is determined by subtracting the total number of blunting items endorsed from the total number of monitoring items endorsed. Those individuals with a difference score at or above a cut-off score are categorized as monitors and the remainder are categorized as blunters. The cut-off scores in each scoring system have been determined using either the mean when close to the median (e.g., Miller & Mangan, 1983; Miller, Leinbach, & Brody, 1989) or the median scores of the sample studied (e.g., Phipps & Zinn, 1986; Steptoe & O'Sullivan, 1986).

The MBSS was first developed in 1979. As data on the MBSS became available, the conceptualization of the construct has shifted. Miller and Birnbaum (1988) explain that initial work with the scale collapsed across monitoring and blunting dimensions. Using the difference score, individuals are either categorized as monitors or blunters. Currently, Miller (1992) advocates using the monitoring and blunting scoring systems and examining the meaning of each subscale independently. This will allow further exploration of the dimensions of the construct, cognitive informational style (CIS).

The Miller Behavioral Style Scale (MBSS) was designed to identify individuals' CIS based on their self-reported preference for monitoring and blunting strategies in a variety of stressful situations. In terms of use, the MBSS has been confined to research predominantly in the health care setting. The research foci are generally directed to testing aspects of Miller's monitoring and blunting hypothesis including: the extent to which the MBSS predicts information seeking/avoiding behavior and arousal in threat, the interacting effect on arousal of CIS x situational conditions, and the association between CIS and health care related behaviors.

Miller's Hypotheses

The 'minimax hypothesis' (Miller, 1979a, 1980b, 1992) and the 'blunting hypothesis' (Miller, 1979a, 1979c, 1980a, 1981; Miller & Green, 1985), more recently refined and referred to as the monitoring and blunting hypothesis (Miller, 1988b, 1989a, 1992) represent the theoretical basis for the Miller Behavioral Style Scale. Although the minimax hypothesis is complementary to the monitoring and blunting hypothesis, the latter hypothesis is more integral to the MBSS and is thus described in more detail. The hypotheses have evolved to some extent since Miller first described them in the late 70's. For the purpose of this paper, the hypotheses are presented based on the most recent published formulations. To convey a sense of the clarity and conciseness of Miller's description Miller's terminology and excerpts of her definitions are used throughout the descriptions.

The Minimax Hypothesis

The minimax hypothesis addresses the issue of control and when it is preferred and arousal reducing and when no control is preferred and arousal-reducing (Miller, 1979a). Miller (1979a) focuses on 'instrumental control' which is defined as the "ability to make a response that modifies the aversive event" (p. 288). The controlling response may be active or passive and may involve escape, avoidance, or the mitigation of the impact of the threatening event through decreasing the intensity or changing the probability of the threatening event.

With the minimax hypothesis Miller (1979a, 1980b) suggests that individuals seek to minimize their perceived maximum potential harm in any given threatening event.

> "A person who has control over an aversive event insures having a lower maximum danger than a person without control. This is because a person with control attributes the cause of relief to a stable internal source - his own response - whereas a person without control attributes relief to a less stable, more external source" (Miller, 1979a).

Control allows the individual to limit how bad the situation can become. When control will allow an individual to put an upper limit on the potential harm of a threatening event, control will be preferred and less arousal inducing than no control (Miller, Combs, & Stoddard, 1989).

Consider a patient who has a patient controlled analgesia system which allows the patient to self-administer a pre-determined amount of analgesic intravenously within pre-set time intervals. The patient's own response (self-administration of the analgesic) is a more stable guarantee of future minimized pain than if pain control is attributed to a more unstable, external factor - such as a nurse. Given a patient controlled analgesia system, the patient may self-administer the analgesic as soon as he/she perceives the need. When administration of the analgesic is administered by the nurse, the procedure for administration of the analgesic is potentially subject to more delay. For example, a nurse may not be immediately available and once notified of the need for an analgesic, the nurse must gather the equipment and the medication before it can be administered.

Miller (1979a) suggests that some individuals will choose to give up control in a controllable situation for one of four reasons: i) a lack of certainty that they will be capable of controlling actions; ii) lack of certainty that the controlling response will reliably lead to the desirable change; iii) having to discover what the controlling response is that reliably leads to the outcome; and iv) trust that someone else's response is a more stable guarantee of a maximum upper limit of potential harm. When control will not allow an individual to put an upper limit on the potential harm of a threatening event, uncontrollability will be preferred and will be less arousal-inducing than controllability (Miller, Combs, & Stoddard, 1989). For example, in the health care setting, Miller suggests effective forms of control are not generally available (Miller, Combs, & Stoddard, 1989). Out of necessity, patients are subjected to threatening procedures such as cardiac catheterization, endoscopy, and colposcopy. One aspect of control in this setting is making choices about therapeutic and diagnostic management. However, control related to making choices may often be relinquished to the identified experts (ie., health care professionals). Even given reasonable amounts of information to make informed choices, patients may perceive health care professionals to be more informed and thus more likely to choose a course that will minimize harm to them. In such situations, patients are likely to abdicate control. Furthermore, forcing the patients to take control through making choices about management may increase their arousal if indeed the patients are convinced someone else is more capable of minimizing potential harm to them.

The Monitoring and Blunting Hypothesis

The monitoring and blunting hypothesis spells out when threat-relevant information is preferred and when it is not preferred. Further, the hypothesis spells out when threat-relevant information is arousal reducing and when it is arousal inducing (Miller, 1988a, 1989b, 1992; Miller, Combs, & Stoddard, 1989). Miller suggests that there are two main cognitive modes for coping with threatening events; monitoring and blunting. Monitoring is the extent to which the individual is "alert for and sensitized to threat-relevant information" (Miller, 1988b, p. 7). Blunting is the "extent to which the individual cognitively avoids or transforms threat-relevant information" (Miller, 1988b, p. 7). Miller suggests that the extent to which these modes are engaged is reflected in information-seeking and information-avoiding behavior. The monitoring items in the MBSS include activities involving thinking about past experiences (Table 1; items 18, 20, 23), looking for information in the environment (Table 1; items 6, 7, 12, 13, 16, 25, 30), seeking information from others (Table 1; items 1, 4, 17, 28, 31), and staying alert (Table 1; item 10). Miller (1992) states that the blunting mode is engaged using threat-relevant information avoiding behavior or blunting strategies such as detachment, distraction, reinterpretation, relaxation, denial, intellectualization, and calming self-talk. Only avoiding and distraction appear to be represented in the MBSS (Table 1). Blunting strategies represented in the MBSS include: suppression of cognition (items 2, 5, 14, 21, 22, 29), thinking about something else (items 3, 8, 9, 15, 24), talking about something else (11, 26), and interacting with the environment to distract (19, 27, 32). Strategies such as distraction facilitate cognitive avoidance of threat-relevant information processing. Strategies such as reinterpretation and intellectualization transform how threat-relevant information is processed.

Transformation of threat-relevant information involves focusing attention on the benign, less negative aspects of the threatening situation (Miller & Green, 1985). Miller offers no definition of denial, relaxation, or calming self-talk (refer to Appendix A for definitions).

In a threatening event, arousal remains high to the extent that an individual is monitoring the negative aspects of the threatening event (Miller, 1988b; Miller & Green, 1985). Arousal is reduced when the individual is able to cognitively avoid objective sources of danger using blunting strategies. Thus, the more the individual monitors and the less the individual blunts the negative aspects of threat, the higher the arousal. The less the individual monitors and the more the individual blunts the negative aspects of threat, the lower the arousal. When an individual experiences a stressful situation in a relaxed state, the impact of the event may be reduced (Miller, Combs, & Stoddard, 1989).

Miller (1988b) claims that there are situational factors and personal factors which make it difficult to engage blunting strategies such as distraction. In terms of the situational factors, the more psychologically intrusive and invasive the situation, the less likely the individual will be able to blunt. The application of distraction is not supported in controllable situations, highly intense threatening situations, or in situations in which there is a limited availability of distractors. According to Miller (1988b) the intensity of threat situations is greater if they are more imminent, more probable, and of longer duration. The application of distraction is supported in situations in which distractors are available, control is not possible or the threat is of low intensity (Miller, 1979a, 1980a; Miller, Combs, & Stoddard, 1989).

In terms of the personal factor, Miller suggests that individuals differ in their perceived self-efficacy and ability in the application of monitoring and blunting strategies. Miller refers to these individual differences as cognitive informational styles (CIS). Those with a high level of ability and perceived self-efficacy in the application of blunting strategies such as distraction should tend to consistently prefer not to gain rather than to gain knowledge about the threat situation even in situations which may not support distraction. Those with low levels of ability and perceived self-efficacy in the application of blunting strategies will prefer threat-relevant information over no threat-relevant information, particularly in situations which do not support the use of blunting strategies. Threat-relevant information will be preferred and arousal-reducing for such individuals because information provides them at least with environmental cues that signal safety and reduce uncertainty (Miller, 1988b;

Miller, Combs, & Stoddard, 1989).

High monitoring and low blunting are the main cognitive coping modes in a controllable threatening event. Although monitoring can heighten arousal, this is offset by the arousal-reducing effects of the individual's awareness of his or her potential to engage controlling actions which in turn will assure the minimizing of harm. In an uncontrollable threatening event, low monitoring and high blunting are the main cognitive coping modes for many people. Threat-relevant information cannot be used to modify the harm associated with an uncontrollable threatening event, so there is no offsetting arousal reduction. Thus, in the uncontrollable threatening situation, blunting is the more effective means of reducing arousal for many individuals. However, because individuals vary in the extent to which they believe themselves to be effective blunters, in an uncontrollable situation some individuals may prefer to continue to monitor. In an uncontrollable situation, monitoring reduces arousal through the reduction of uncertainty and through awareness of safety signals. Miller (1988b) also suggests that individuals may monitor in an uncontrollable situation to find someone who is capable of minimizing the harm of the situation. For example, a patient may try to find the best cardiovascular surgeon for their surgical needs. Alternatively, in a controllable situation, some may prefer to continue to avoid information, assuming a high blunting low monitoring cognitive mode. Control may be given up for one of the reasons stated in the minimax hypothesis. Finally, Miller (1988b) suggests that if an individual is forced to a non-preferred cognitive mode, the individual will experience higher levels of arousal than if allowed to engage a preferred cognitive mode. For example, an individual who prefers not to know about the threatening situation will experience higher arousal when given threat-relevant information than if given the opportunity to engage in a distracting activity.

In summary Miller suggests that individuals have cognitive informational styles which, together with the perceived situational characteristics, determine the extent to which the individual will monitor and blunt in a threatening situation.

Predictions based on the Monitoring and Blunting Hypothesis

Based on Miller's description of her hypothesis, 6 predictions have been extracted as follows:

1. "Arousal remains high in aversive situations to the extent that an individual is tuned into and monitors the negative aspects of the event" (Miller, 1988b, p.7)
2. "Arousal is reduced when (an individual) can cognitively avoid and /or psychologically blunt

objective sources of danger (in aversive situations)" (Miller, 1988b, p. 7)

3. "(in an uncontrollable situation) for many individuals, high blunting and low monitoring become the main response modes since an individual without controlling actions can most effectively reduce stress by engaging in a variety of (blunting techniques)" (Miller, Combs, & Stoddard, 1989, p. 109).
4. "People who believe themselves to be effective information avoiders and /or blunters should tend consistently to choose unpredictability, even under conditions which may not support distraction" (Miller, 1988b, p. 9).
5. "for individuals who find it undesirable or too difficult to tune out and distract, ...information will be preferred and stress-reducing, because information provides them at least with external cues that reduce uncertainty and signal periods of safety" (Miller, 1988b, p. 9).
6. "if individuals are forced to their non-preferred condition, they should show higher arousal than they did in their preferred condition" (Miller, 1988b, p.9).

Logical Consistency of Miller's Hypotheses and Scale

The process of extracting a clear idea of Miller's hypotheses was difficult due to lack of clear definition of terms and vagueness in description. In order to provide a flavor of the kinds of problems encountered, some of the more problematic areas of interpretation are presented. Focus is placed on the definition and/or description of cognitive informational style, coping, control, and the predictions based on Miller's hypothesis.

Cognitive Informational Style

There are three aspects of CIS which lack clarity. These are inconsistency in terminology, vagueness in definition, and the dimensionality of CIS.

Inconsistency in Terminology

The most disturbing aspect of clear definition of CIS is the confusion in the use of 'style'. For clarity, the term cognitive informational style has been used consistently throughout this report. However, Miller tends to vary her terms in reference to the construct of cognitive informational style (CIS). For example the construct of CIS is referred to as a dispositional style (Miller, 1992); an attentional style (Miller, 1989b); a coping style (Miller, 1988a, 1989a, 1989b; Miller, Leinbach, & Brody, 1989; Miller & Green , 1985; Miller, 1979a, 1980a; Miller & Mangan, 1983); a cognitive style (Miller, 1987) ; a trait (Miller, 1979b); an informational style (Miller, 1988a, 1992; Miller & Birnbaum, 1988); and a cognitive informational style (Miller, 1988b). Finally Miller has named her scale the Miller Behavioral Style Scale. This makes it difficult to grasp what 'style' encompasses conceptually.

Each of these terms is differentiated in the literature. To illustrate the confusion, the definitions of three terms are contrasted: coping versus style; style versus trait; and behavior versus cognition.

Lazarus and Folkman (1984) define coping as the "the constantly changing cognitive and behavioral efforts to manage specific external and /or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). This definition suggests that coping requires effort and would therefore exclude automatized behavior and thought. According to Lazarus and Folkman (1984), cognitive styles refer to automatized as opposed to effortful responses and thus would not be considered as coping.

Lazarus and Folkman (1984) suggest that a coping style differs from trait primarily in degree. A coping style refers to broad ways of relating to particular types of situations whereas traits refer to properties of persons that dispose them to react in certain ways in given classes of situations.

Miller's construct, cognitive informational style, appears to fit the description of a trait rather than a style. Cognitive informational style disposes individuals to use a specific combination of information-seeking and avoiding strategies in threatening situations, particularly of an uncontrollable nature. Miller's focus is on the application of specific strategies in specific types of situations.

The title, 'Miller Behavioral Style Scale' implies that the scale measures a behavior. However, among other things, Miller refers to the construct measured by the MBSS as a cognitive informational style. Traditionally 'cognition' has been used to refer to such activities as thinking, conceiving, and reasoning (Reber, 1985). By contrast, 'behavior' has been defined as responses which are overt and objectively measurable, although it is acknowledged that there is a trend to expand the denotative domain to include cognition (Reber, 1985). The MBSS includes items which describe conventional cognition (for eg., "I would try to think about pleasant memories"). Items in the MBSS also describe overt behavior (for e.g., "I would talk to the person beside me about what might be wrong"). Thus, Miller appears to assume the broader definition of behavior.

Vagueness in the Definition of Cognitive Informational Style

In addition to the variety of terms used to describe Miller's notion of 'style', it is also difficult to discern whether CIS is the extent to which individuals monitor and blunt or whether CIS is the extent to which individuals monitor and distract. This is due in part to the fact that Miller uses the term blunting interchangeably with the term distraction. For example, Miller (1988a) states that the MBSS "has been devised to identify the high and low 'monitors' and the high and low 'blunters' " (p. 26). In another description of the purpose of the MBSS, Miller (1989b) states the "MBSS divides individuals into coping style groups on the basis of their self-reported preferences for information and distraction" (p 10).

The distinction between distraction and blunting is important in terms of making predictions based on the monitoring and blunting hypothesis. Miller states that distraction is one of several blunting strategies. Are individuals who use distraction equally capable or inclined to use other blunting strategies such as reinterpretation, self-relaxation, denial, intellectualization, and calming self-talk? Conversely, does it necessarily follow that if one does not use distraction that other blunting strategies are not used? Miller (1988b) predicts that arousal remains high in aversive situations, the more the individual is monitoring and the less he or she is blunting the negative aspects of a threatening event. It seems possible that there may be individuals who seek information and use blunting strategies other than distraction and who could be equally successful in lowering their level of arousal. Since the MBSS places individuals in a group of CIS based on self-reported preferences for monitoring strategies and distraction, this means that some respondents may be inappropriately categorized in the blunting category in particular.

Dimensionality of Cognitive Informational Style

Miller (1987) directs researchers to treat the monitoring and blunting subscales of the MBSS "as potentially divisible and separate dimensions and to scrutinize the meaning of each independently" (p. 345). However, Miller's monitoring and blunting hypothesis reflects a commitment to the notion that the construct of cognitive informational style is unidimensional. For example:

> "While some people will find it easy or desirable to use coping techniques (or difficult and inappropriate to seek information), others will find it difficult or inappropriate to use such techniques (or easy and desirable to seek information)"

> (Miller, Combs, & Stoddard, 1989, p. 109).

The focus is placed on individuals with MBSS scores representing either high monitoring/low blunting or low monitoring/ high blunting (eg., Miller, 1987, 1988b). Miller offers no interpretation of those MBSS scores which indicate high monitoring /high blunting or low monitoring/low blunting.

Coping

Miller's formal definition of coping appears to exclude monitoring strategies. She defines coping as:

> the regulation of stressful emotions via attention deployment and the modulation of internal arousal. Relevant techniques include relaxation, distraction, reinterpretation, calming self-talk, and so forth (Miller, Combs, & Stoddard, 1989, p. 108).

In this particular definition, Miller suggests that only the application of blunting strategies qualifies as coping because they remove the individual's attention from threat and subsequently reduce arousal. But to exclude monitoring as coping seems contradictory, almost a default position. Miller indicates that individuals who find it difficult or inappropriate to use blunting strategies will prefer to monitor for information. For these individuals, information derived from monitoring will be arousal-reducing because information reduces uncertainty, signals periods of safety, and will allow the individual to identify experts who may be able to minimize harm to them.

Control

Miller's definition of control appears to be too simplistic because she fails to include the target of control. Miller defines control as "the individual's perception that he or she can execute (or has some potential to execute) some action that changes an aversive stimulus" (Miller, Combs, & Stoddard, 1989, p.107-108). The possibilities for control in real life situations are complex (Rothbaum, Weisz, & Snyder, 1982). For example 5 different targets of control in a health care setting have been outlined: " i) to reduce harmful environmental conditions and enhance prospects of recovery, ii) to tolerate or adjust to negative events and realities, iii) to maintain a positive self-image, iv) to maintain emotional equilibrium, and v) to continue satisfying relationships with others" (Cohen & Lazarus, 1979, p 232, cited in Folkman, 1984). What is the target of control that Miller is referring to?

Predictions Based on the Monitoring and Blunting Hypothesis

It is difficult to get a sense of the boundaries in terms of prediction, again because Miller tends to be vague and tends to lack precision in her description. In addition there is a hint of contradiction in her description. For example:

> "people who believe themselves to be effective information avoiders and /or blunters should tend consistently to choose unpredictability, even under conditions which may not support distraction" (Miller, 1988b, p. 9).

Here Miller (1988b) couches a prediction within the monitoring and blunting hypothesis in general terms such as 'tend', and 'conditions'. In turn, the use of general terms allow flexibility in interpretation. For example, based on this description it is possible that some people may indiscriminently apply blunting strategies across all (environmental) conditions regardless of their characteristics. This appears to contradict her notion that person factors interact with situation to determine coping behavior. Miller admits that "a virtually unexplored issue, has to do with the breadth and consistency of these (cognitive) informational styles" (1989a, p. 4).

Summary and Conclusions

The hypotheses underlying the MBSS are more descriptive in nature than explanatory. This conclusion is based on the extent to which Miller couches her hypotheses in general terms (Fisher, 1986). Miller's work may represent an early stage of theory development using an inductive approach. The specific situational and personal configurations which interact to define behavior and moderate arousal need to be more clearly delineated. Clarity of meaning could be enhanced by increasing the precision of definitions as well as the consistency in the use of terms. A major inconsistency between the underlying hypotheses and the MBSS is related to the issue of the dimensionality of CIS. Conceptually, Miller treats CIS as if it is a unidimensional construct, and yet Miller advocates using the monitoring and blunting scoring procedure and treating the monitoring and blunting subscales as distinct from each other, thus introducing the possibility of having high or low scores in both subscales simultaneously. Miller's hypothesis offers no explanation for what such groups of CIS would mean theoretically.

CHAPTER III

EVIDENTIAL VALIDITY EVIDENCE

This chapter begins with an overview of the historical background to set the context in which Miller's work arose. The extent to which Miller's construct, cognitive informational style (CIS), is congruent with the predominant approach-avoidance trait formulation and transaction view of the determinants of behavior in threat is briefly discussed. Then evidence of the content relevance and representativeness of the situations and items in the MBSS is presented. This is followed by a discussion of the evidence related to the internal and external structure of the MBSS. Areas of focus for further study are identified throughout.

Historical Background

Literature related to coping with threat draws from two different theoretical positions, the tradition of animal experimentation and psychoanalytic ego psychology (Lazarus & Folkman, 1984). The animal model spawned a 'situationist view' which emphasizes the situational factors in determining a person's behavior. Psychoanalytic ego psychology spawned a 'personalist' position which emphasizes the role of personal factors in determining behavior.

Most theoretical accounts arising from the situationist view (e.g., preparatory response, uncertainty reduction, safety signal) assume that people prefer to be informed about upcoming threatening procedures and would experience a reduction in psychological arousal when given information (for a review see Miller, 1981). For example, the safety signal suggests that when a danger signal reliably signals a threatening event, the absence of the danger signal reliably signals safety. Thus, when in the presence of a safety signal, a person can relax (Seligman & Binik, 1977).

However, the research findings have been mixed. Some prefer threat-relevant information over no information (Elliot, 1969; Egbert, Battit, Welch, & Bartlett, 1964) and experience either a reduction in psychological arousal or no effect when given information (Averill & Rosen, 1972; Ridgeway & Mathews, 1982; Vernon & Bigelow, 1974). Others prefer no information over threat-relevant information (Averill & Rosen, 1972) and experience an increase in psychological arousal when given information (Geer & Maisel, 1972; Monat, Averill, & Lazarus, 1964).

The 'personalist' position supposes people have broad and stable traits which predispose them to behave in a consistent manner across situations (Lazarus & Folkman, 1984; Perrez & Reicherts, 1992). According to Roth and Cohen (1986) the approach-avoidance distinction is a pervasive concept underlying the study of trait in the anticipatory literature. Approach-avoidance represent cognitive activity that is either oriented toward or away from threat. One of the most popular approach-avoidance formulations in the anticipatory threat literature is the repression-sensitization distinction. Based on the traditional psychoanalytic model, the individual is perceived to be equipped with a subconscious defense mechanism designed to reduce psychological arousal. 'Repressors', at one end of a repression-sensitization continuum, react to threat by engaging in behavior to avoid the anxiety-arousing stimulus and thus reduce psychological arousal. At the other end of the continuum, sensitizers try to reduce psychological arousal by controlling the threatening stimulus (Byrne, 1964). However there has been no systematic evidence of consistency of behavior across dissimilar situations (Lazarus, 1990; Laux & Vossel, 1982; Mischel, 1983).

The traditional situationist position could not adequately account for the mixed research findings in relation to the preference for and the effect of information on psychological arousal. However, the traditional personalist's dismissal of the influence of situational factors on behavior could not be defended based on the growing evidence of its effect. The personalist view has shifted from a situation-blind to a situation-specific position in acknowledgment of the evidence of the influence of the situation on behavior. The situation-specific position takes into account the situation and the person by situation transaction (Ben-Porath & Tellegen, 1990; Laux & Vossel, 1982; Shultheis, Peterson, & Selby, 1987). Although debate continues regarding the dominance of situation effects over the influence of personal factors in determining behavior, there is a growing consensus in terms of the recognition of the possible role personal variables play in mediating situational influences (Costa & McCrae, 1990; Krohne, 1990; Lazarus, 1990; Moos & Swindle, 1990; Ben-Porath & Tellegen, 1990).

Miller (1979c) introduced the blunting hypothesis to account for the inconsistencies in findings related to the preference for threat-relevant information and the effect of information on anticipatory arousal. Miller's hypothesis is a situation-specific, approach-avoidance trait formulation which represents an extension of Seligman's safety signal hypothesis (Miller, 1988b; Shultheis, Peterson, & Selby, 1987). Miller (1988b) spells out when information would be preferred and when it would not be preferred. Further, she spells out when information would increase arousal and when it would decrease arousal.

Based on her hypothesis, Miller (1979b) developed the Miller Behavioral Style Scale (MBSS) to identify her situation-specific approach-avoidance trait which is referred to as cognitive informational style (CIS).

Summary

The construct cognitive informational style represents a trait formulation which is congruent with the approach-avoidance approach that has dominated the study of personal variables in the literature on coping with threat. Furthermore Miller's trait formulation is congruent with the contemporary, transactional view of the determinants of behavior. Compared to the traditional views of the determinants of behavior, Miller's situation-specific approach-avoidance formulation provides a better account of contradictory findings of research pertaining to the preference for and the effects of information on arousal in threatening situations.

Content Relevance and Representativeness of Miller's Scale

To date, the procedures Miller used to generate and evaluate the situations and the items in the MBSS have not been described in published literature. Evidence of the content relevance and representativeness of the situations and the items is presented and critiqued here. Suggestions for further research in each of these areas are put forward.

Content Relevance of the Situations

According to Brailey (1984) a problem with vignettes of stressful situations is that they may not represent either realistic or stressful situations for some respondents. Of the four situations depicted in the MBSS, the first refers to a dental visit, the second refers to being held hostage by armed terrorists, the third refers to awaiting a decision about job layoffs, and the final refers to being in an airplane and feeling that all is not well (see Chapter II, Table 1). Steptoe (1989) suggests that the airplane situation and the hostage situation are removed from the everyday experience of the majority of members of the United Kingdom. Few people in North America have direct experience with hostage situations, particularly involving terrorists. In North America, direct experience with dental visits and with airplane travel may be highly related to income and or education. However, it may be that the majority of North Americans are likely to experience all the situations in the MBSS if not in reality, at least vicariously.

Respondents are required to "vividly imagine" that they are in the situations presented in the MBSS. Indirect evidence related to the relevancy of the situations may be extracted from studying respondents' perceptions of the imaginability of the MBSS situations. The premise, although weak, is that compared to situations that are not imaginable, imaginable situations are more likely to represent relevant situations. Fifty-five volunteer Dutch citizens were asked to rate the 4 situations in the MBSS on imaginability, using a 4-point Likert scale (Van Zuuren & Wolfs, 1991). Van Zuuren and Wolfs (1991) only provide the descriptors for 1 and 4 of their likert scale (1 = not at all, 4 = very). It is assumed that 2 means that the situation is somewhat difficult to imagine, and 3 means that the situation is somewhat easy to imagine. Their sample rated the hostage situation as the least imaginable (Mean = 2.8, SD = 0.9) and the airplane situation as the most imaginable (Mean = 3.4, SD = 0.7) of the 4 situations. It may be concluded that in this sample, the situations are generally imaginable.

It is necessary to replicate this work to establish the extent to which these findings may generalize across other samples and populations. In addition the data pertaining to the imaginability of the situations would be enriched by asking respondents to provide a rationale for their responses. The rationale may unearth ambiguities related to the description of the situations. A technical analysis of the MBSS situations to judge aspects of the readability level, freedom from ambiguity, and irrelevance would further add to the evidence of their relevance. Survey methods could be used to determine common threatening situations encountered. The results could then be used to indicate the extent to which the situations in the MBSS are typical or atypical of threat encountered in any given sample.

Content Relevance of the Items

Miller (1988b) states that half of the items in the MBSS represent monitoring and the other half represent blunting strategies (or more specifically distracting) strategies. A technical analysis of the items has not been explicated in the published literature to confirm the placement of the items within these two categories. Further, it may be that some items represent strategies which are not realistic in the context of the situations presented. For example, in the airplane situation, one of the distracting strategies is, "I would order a drink or tranquillizer from the stewardess" (Table 1, Chapter II). Depending on the degree of air turbulence, drinks may not be made available to passengers. Although the alcoholic drink has a tranquillizing effect, a 'tranquillizer' may be perceived as something other than alcohol and as something that is not generally offered to passengers.

An important initial step in the process of establishing item relevance would be to conduct a technical analysis of all of the items to judge aspects such as the readability level and freedom from ambiguity and irrelevance. Indirect evidence of item relevance may be reflected in an assessment of item response frequencies and correlations. Items which are seldom selected or correlate poorly with similar items may be suspect in terms of relevance. It would also be of benefit to study the respondents' rationale for their selection and non-selection of items in the MBSS using guided interview techniques. The extent to which the strategies represented by the items in the MBSS are found in the interview data would add to the evidence of the relevance of the items in the MBSS.

Representativeness of the Situations

Miller (1988a) describes the MBSS as consisting of "4 stress-evoking scenes, of an uncontrollable nature" (p. 26). Theoretically, Miller (1988b) indicates that personal factors interact with the perceived characteristics of the situations to determine coping behavior. Important characteristics of the situations to consider include: the intensity of threat, defined by the imminence, probability and duration of the situation; the predictability; and controllability (Miller, 1988b). As noted earlier, Van Zuuren and Wolfs (1991) used a 4-point Likert scale (1 = not at all, 4 = very) to investigate a sample of 55 Dutch volunteers' perceptions of the MBSS situations on several characteristics. In addition to imaginability which has already been mentioned, they rated degree of threat, degree of control, degree of predictability, degree to which it is possible to obtain additional information on the situation, and duration. The mean and standard deviations of the ratings assigned by this sample on these characteristics for each of the situations in the MBSS are presented in Table 2. The 4 mean scores on the level of threat of the MBSS situations were close to 3 on the 4-point Likert scale. This provides some evidence that the sample used by Van Zuuren and Wolfs (1991) perceived the situations in the MBSS to be stress-evoking. The 4 mean scores on the level of perceived control of the MBSS situations were approximately 2. This provides some evidence that the sample studied perceived the MBSS situations to be of somewhat low control. The 4 mean scores on the remaining characteristics (predictability, degree to which it is possible to obtain information and duration) ranged between 2 and 3 approximately. Overall their data analysis indicated that their sample perceived the MBSS situations to represent a range of threatening situations that are stress-evoking and of low control relative to a 4-point Likert scale (1 = not at all, 4 = very).

It would be important to replicate this work using samples of North American populations to determine the generalizability of these findings.

Table 2 has been removed because of copyright restrictions. The table presented the means and standard deviations by situations on imaginability, threat, control, predictability, information, and duration. This table was adapted from information included in a table from "Styles of information seeking under threat: Personal and situational aspects of monitoring and blunting" by F.J. Van Zuuren and H.M. Wolfs, 1991, Personality and Individual Difference, 12(2), p. 146. Copyright Pergamon Press.

Representativeness of the Items

Individuals are placed in high and low monitoring categories based on the number of information-seeking strategies endorsed in the MBSS (Miller, 1987). Miller provides no indication that there are strategies other than information-seeking strategies which may reflect the monitoring mode.

An individual's blunting category (ie., high or low blunting) is determined by a self-reported preference for distraction (Miller, 1987). Miller states (1979c, 1981, 1980a) that the strategy of distraction is more amenable to measurement than other blunting strategies such as detachment, reinterpretation, relaxation, denial, intellectualization, and calming self-talk . However, limiting the range of strategies depicted by the MBSS blunting items to distraction could introduce systematic error in the process of identifying the extent to which individuals are blunting (ie., construct underrepresentation as described by Messick, 1989).

It may be that both the monitoring and the blunting items underrepresent the constructs of monitoring and blunting. It would be useful to attempt to determine the range of information-seeking and avoiding strategies that the situations in the MBSS evoke. This may be accomplished through content analysis of responses to the MBSS situations obtained using guided interviewing techniques. The relevance and representativeness of both the situations and the items in the MBSS might be further explored through comparing responses to the MBSS with self-reports of coping strategies given another series of threatening, hypothetical situations. Assuming that there is such a thing as CIS, if the MBSS situations and items are relevant and representative, the two methods should result in similar CIS group assignments.

Summary of Recommendations for Future Study

It is recommended that further study is required to further verify the evidential validity in relation to the relevance and representativeness of the situations and the items included in the MBSS. Further evidence of the relevance and representativeness of the situations in the MBSS may be established through: i) surveying commonly encountered threatening situations ii) obtaining volunteers' perceptions of the characteristics of the situations in the MBSS and the rationale for their perceptions, and iii) conducting a technical analysis of the descriptions of the MBSS situations (i.e., readability, freedom from ambiguity and irrelevance). Evidence of the item relevance and representativeness may be accomplished through an analysis of: i) item frequencies and correlations, ii) respondents' rationale for item selection and non-selection in each of the MBSS situations, iii) technical aspects of the items (i.e., readability, freedom from ambiguity and irrelevance), and iv) responses to MBSS situations using guided interviews. Assuming there is a CIS, evidence of both item and situation relevance and representativeness may be extended by comparing responses to the MBSS with responses to another set of hypothetical situations.

Internal Structure of Miller's Scale

Relationships of Items Among the Situations

Internal Consistency

Reports of the internal consistency of the MBSS are conflicting. Miller (1987) and Van Zuuren and Wolfs (1991) report studies in which they investigated the internal consistency of the MBSS using the monitoring and blunting scoring system. Table 3 presents the means, standard deviations, and alpha coefficients for the monitoring and blunting subscales that resulted from the research done by these authors.

Table 3 has been removed because of copyright restrictions. The table presents the means, standard deviations, and internal consistencies for the monitoring and blunting subscales reported by Miller (1987) and Van Zuuren and Wolfs (1991). Information included in table 3 was adapted from "Validation of the Miller Behavioral Style Scale" by S.M. Miller, 1987, Journal of Personality and Social Psychology,52(2), p. 348. Copyright 1987 by the American Psychological Association, Inc. Information included in table 3 was also adapted from "Styles of information seeking under threat: Personal and situational aspects of monitoring and blunting" by F.J. Van Zuuren and H.M. Wolfs, 1991, Personality and Individual Difference,12(2),p. 146. Copyright 1991 by Pergamon Press.

Based on data from undergraduate students, Miller (1987) reported alpha coefficients of .79 (n = 30) and .75 (n = 40) for the monitoring subscale and .69 (n = 30) and .67 (n = 40) for the blunting subscale respectively. Van Zuuren and Wolfs (1991) calculated internal consistencies for the monitoring and blunting subscales using two different versions of the MBSS: the original, dichotomous version developed by Miller (1987) and a 5-point version, developed by Van Zuuren and Wolfs (1991). In the 5-point version of the MBSS (1 = this is not applicable to me, 5 = this is very applicable to me) the range of possible scores for both the monitoring and the blunting scales is 16 to 80. Based on data from 47 Dutch, undergraduate students, Van Zuuren and Wolfs (1991) reported alpha coefficients of .66 for the monitoring subscale and .33 for the blunting subscale of the dichotomous version of the MBSS. Three months later, the same sample of 47 Dutch, undergraduate students completed the 5-point version of the MBSS. Using the 5-point version of the MBSS, Van Zuuren and Wolfs (1991) reported alpha coefficients of .78 and .76 for the monitoring and blunting subscales respectively.

Differences in the internal consistency between these studies may be attributed to differences in the sample and to the MBSS scales that were used. It may be that Dutch students (Van Zuuren & Wolfs, 1991) perceive the items and situations in the MBSS differently compared to the North

American students in Miller's (1987) work. Furthermore the 5-point version of the MBSS forces the respondent to make a more discriminating response than the dichotomous version of the MBSS.

The results of Miller's (1987) work indicate that both the dichotomously scored monitoring and blunting items appear to be relatively homogenous based on data using North American students. This is expected based on the premise that the MBSS items depict two kinds of strategies: threat-relevant information-seeking strategies and threat-relevant information-avoiding strategies. It would be important to examine the internal consistencies using other samples of populations in North America to increase the generalizability of these findings. The use of a 5-point scoring procedure may result in a more discriminating response than the dichotomous version of the MBSS.

Correlations Between Monitoring and Blunting Subscales

Investigations of the correlations between the monitoring and blunting subscales of the MBSS have yielded mixed results. Although Miller (1988b) suggests the subscales should be explored separately, she describes CIS as if it were on a continuum. Furthermore, the scoring procedure in which the blunting score is subtracted from the monitoring score (DSP) is consistent with a unidimensional construct. If this is the case, the monitoring and blunting subscales should be negatively correlated. That is, those with a high monitoring score should have a low blunting score. This is supported in two investigations reported by Miller (1987) in which the monitoring and blunting subscales were found to be negatively correlated [$r(28) = -.41$, $p \leq .01$; $r(38) = -.49$, $p \leq .01$]. By contrast no relationship between the monitoring and blunting subscales was found in other investigations (Miller, Brody & Summerton, 1988; Van Zuuren & Wolfs, 1991). Both Van Zuuren and Wolfs (1991) and Miller, Brody, & Summerton (1988) report a correlation coefficient of -.07 between the monitoring and blunting subscales. The balance of the findings appear to suggest that the monitoring and blunting subscales are not correlated, contradicting the notion of unidimensionality. The dimensionality of the MBSS needs to be further clarified theoretically and structurally.

Item Response Rates Across Situations

Two studies were found in which the monitoring and blunting responses were examined across situations in the MBSS (Steptoe, 1989; Van Zuuren & Wolfs, 1991). The mean scores and standard deviations for monitoring and blunting by situations reported in each of these studies are presented in Table 4.

Table 4 has been removed because of copyright restrictions. The table presented the means and standard deviations for monitoring and blunting by situations for two different studies (Steptoe, 1989; Van Zuuren & Wolfs, 1991). Information resulting from the study by Van Zuuren & Wolfs was adapted from information included in a table from "Styles of information seeking under threat: Personal and situational aspects of monitoring and blunting" by F.J. Van Zuuren and H.M. Wolfs, 1991, Personality and Individual Difference,12(2), p. 146. Copyright Pergamon Press.

Using the 5-point version of the MBSS, Van Zuuren and Wolfs (1991) report statistically significant differences in response rates on monitoring and blunting items between the 4 situations of the MBSS in their sample of 47 students. Students demonstrated higher mean response frequencies for monitoring in both the hostage (15.58) and the airplane (13.75) situations compared to the layoff (11.60) and the dentist (10.71) situations. In terms of the blunting subscale, students demonstrated higher mean response frequencies for blunting in the airplane (10.98) and layoff (10.66) situations than in the hostage (10.00) or dentist (6.49) situations.

Steptoe (1989) investigated the MBSS responses of 80 undergraduates and 40 oncology patients, using the dichotomous version of the MBSS. The response frequencies of the patients compared to the students demonstrated similar trends. The mean monitoring response frequencies of patients and students was lower in the layoff + dentist situations (4.66 and 4.45 respectively) than for the hostage + airplane situations (5.21 and 6.05 respectively). Similarly the mean blunting response frequencies of patients and students was lower in the layoff + dentist situations (1.43 and 2.98 respectively) than for the hostage + airplane situations (1.74 and 3.45 respectively). However, these differences were not found to be statistically significant.

It is difficult to compare the work of Van Zuuren and

Wolfs (1991) with that of Steptoe (1989). Each group of researchers used a different scoring model (ie., 5-point version versus the dichotomous version). Steptoe (1989) compared monitoring and blunting subtotals on 2 situations with another 2 situations (ie., layoff + dentist versus hostage + airplane). Van Zuuren and Wolfs (1991) compared monitoring and blunting subtotals on each of the situations individually. Both Van Zuuren and Wolfs (1991) and Steptoe (1989) report that volunteers tended to select more monitoring items in the hostage and airplane situations than in the layoff and dentist situations. However, Van Zuuren and Wolfs' (1991) sample demonstrated higher response frequencies on blunting in the layoff and airplane situations than on either the hostage or dentist situations.

Taken together, the results of these studies indicate that the perceived characteristics of the situation may have a strong impact on behavior in coping. Different situations in the MBSS stimulate the application of different combinations of monitoring and blunting strategies. This is congruent with Miller's monitoring and blunting hypothesis in which she suggests that situational factors play a role in determining coping behavior. It would be useful to investigate the representativeness of the 4 situations. Also, it would be of interest to further investigate the structure of the MBSS using correlational procedures and factor analysis.

Summary and Recommendations for Future Study

To date, little validity evidence has been reported in the literature pertaining to the internal structure of the MBSS. Based on data from North American students, the reported alpha coefficients on both the monitoring and blunting subscales indicate that the items, as expected, are relatively homogeneous (Miller, 1987). A lack of significant correlations between these subscales suggests that they may be separate and distinct dimensions. The reported response frequencies on the items by situations suggest that different situations result in significantly different application of monitoring and blunting strategies. To clarify the internal structure of the MBSS, further investigations using correlational and factor analysis procedures are recommended. Based on Miller's theory, one would expect to find a two factor solution if the situations in the MBSS are perceived similarly: a factor representing monitoring and a factor representing blunting. Alternatively, since there is some indication the situations are not similarly perceived and given Miller's (1992) transactional view of coping, a four factor solution representing each of the 4 situations in the MBSS may be a better fit for MBSS data.

External Structure

Convergent Validity Evidence

Relationships Between the MBSS and Other Instruments

There is some evidence to indicate that individuals demonstrating an internal locus of control use more problem-focused coping strategies than externals (Anderson, 1977; Grace & Schill, 1986). Miller (1992) suggests that her definition of blunting corresponds to Folkman and Lazarus' (1980) concept of emotion-focused coping while monitoring may be viewed as a component of problem-focused coping. Based on these theoretical relations the monitoring subscale would be expected to correlate positively with both internal locus of control and problem-focused coping. By contrast, the blunting subscale should be positively associated with an external locus of control and emotion-focused coping.

Locus of control.

Van Zuuren and Wolfs (1991) compared MBSS responses with responses on the Trent Attribution Profile (TAP) (Wong & Sproule, 1984) in a sample of 47 Dutch undergraduate students. The TAP scale was designed to measure locus of control. Comparisons between TAP and MBSS scores were made using both a 5-point response version of the MBSS and the dichotomous response version of the MBSS. As expected, the monitoring subscale on both the 5-point version and the dichotomous version of the MBSS were significantly correlated with scores on TAP. Unexpectedly, the blunting subscale was not found to be correlated with the scores on TAP. Van Zuuren and Wolfs (1991) suggest that the lack of relationship between the blunting subscale and TAP may be attributed in part to the low internal consistency of the blunting subscale, particularly, the dichotomous version (see Table 3). A lack of relationship may also be due to lower variability in blunting scores.

Monitoring and problem-focused coping.

Van Zuuren and Wolfs (1991) also compared MBSS responses with responses to the Ways of Coping Checklist (WCC) (Folkman & Lazarus, 1980). The WCC scale contains a broad range of both behavioral and cognitive strategies for dealing with stressful situations. As predicted, Van Zuuren and Wolfs (1991) found a significant positive correlation between monitoring and the problem-focused/help-seeking factor of the WCC using the 5-point version of the MBSS. However, using the dichotomous version, the correlation was not statistically significant. This may be due to the lower variability in the dichotomous version of the MBSS (Van Zuuren & Wolfs, 1991).

Carver, Scheier, and Weintraub (1989) compared scores on the MBSS with scores on a modified version of the WCC, referred to as the COPE scale consisting of 13 subscales. Only 6 of the subscales of COPE Scale are presented in Table 5 and are discussed here. Based on scores from a sample of 162 students they found a significant negative correlation between monitoring and the COPE subscale of 'behavioral disengagement' and a significant positive relationship with the subscale, 'seeking social support for instrumental reasons'. These findings appear to complement those of Van Zuuren and Wolfs (1991). The items included in the behavioral disengagement subscale describe strategies to disengage from the focus on the problem, therefore a negative relationship with the monitoring subscale of the MBSS is expected. The items included in the COPE subscale of seeking social support for instrumental reasons represent problem orientated, information-seeking behavior similar to the monitoring items in Miller's scale. Carver and his colleagues (1989) also expected to find a positive relationship between the COPE subscale 'planning' and the monitoring subscale of the MBSS. This would seem to be a reasonable hypothesis since planning would require information about the situation. Unexpectedly, no significant relationship between monitoring and planning was found. However, the motivation for seeking information according to Miller (1992), particularly in an uncontrollable situation, is to seek safety signals and reduce uncertainty as opposed to planning a solution for the problem. Thus it could be argued that the lack of relationship between planning and monitoring supports Miller's hypotheses.

Table 5 has been removed because of copyright restrictions. This table presented 6 subscales from the COPE Scales adapted from "Assessing coping strategies: A theoretical based approach" by C.S.Carver, M.F. Scheier, and J.K. Weintraub, 1989, Journal of Personality and Social Psychology, 56(2), p.272. Copyright 1989 by the American Psychological Association, Inc.

Monitoring and emotion-focused coping.

Unexpectedly, Van Zuuren and Wolfs (1991) found a significant positive relationship between scores on the monitoring subscale of the MBSS and scores on the wishful thinking/escape subscale of the WCC, using both scoring versions of the MBSS. An item analysis indicated that the relationship between monitoring and wishful thinking/escape was mainly due to items dealing with 'positive thinking' (Van Zuuren & Wolfs, 1991). It has been suggested that positive thinking may be an important facilitator of problem-focused coping (Carver, Scheier & Weintraub, 1989; Folkman & Lazarus, 1985). Carver, Scheier, and Weintraub (1989) found a significant positive relationship between monitoring and the subscale of 'venting of emotions' and 'turning to religion' in their COPE scale. Miller (1992) suggests that the relationship between monitoring and 'venting of emotions' is expected. If one is monitoring, threat would be psychologically present which would result in an emotional reaction. Carver and his colleagues (1989) suggest that monitors, as a result of their vigilance, may be more aware of their distress. This fits with the results of work by Miller and Birnbaum (1988) who found that high monitors compared to low monitors, had less severe medical problems, based on ratings by physicians, but were equally concerned about the seriousness, discomfort, disfunction, disability, and stress related to their medical problems.

Given monitors may be more aware of their distress than blunters, it seems reasonable that monitors would engage coping strategies which would relieve their emotional distress, yet allow monitoring to continue. Positive thinking could be classified as an emotion-focused blunting strategy which, unlike distraction, is more compatible with monitoring.

The reason for the positive relationship found between monitoring and turning to religion (Carver, Scheier, & Weintraub, 1989) may be similar. It may be, that individuals who prefer to monitor may turn to religion as a way of dealing with emotional arousal that allows them to continue to monitor the problem.

Blunting and emotion-focused coping.

As predicted, the blunting subscale was found to be significantly correlated with the emotion-focused coping category of wishful thinking/escape (Van Zuuren & Wolfs, 1991). However, the relationship was significant only using the 5-point version of the MBSS. Using the dichotomous version of the MBSS, Carver and his colleagues (1989) found no relationships between the blunting subscale of the MBSS and any of the subscales from the COPE scale including 'behavioral disengagement' and 'mental disengagement'.

The lack of relationship between blunting and any of the subscales of COPE may have been a result of the low internal consistency of the blunting subscale. Unfortunately, Carver and his colleagues (1989) do not provide the internal consistencies for the MBSS subscales in their report.

Conclusions and directions.

As expected, Miller's monitoring subscale is positively associated with internal locus of control and problem-focused coping. However, making the distinction that those with high scores on the monitoring subscale are not emotion-focused may not be accurate. Lazarus and Folkman (1984) suggest that the emotional reaction to stress needs to be contained in order for an individual to continue with problem-solving. Thus, the association between the scores on the monitoring subscale and on strategies which may reduce emotional reaction but allow monitoring to continue seem reasonable (i.e., positive thinking , turning to religion, ventilation of emotions). There is a conspicuous lack of relationship between blunting and external locus of control (Van Zuuren & Wolfs, 1991), and emotion-focused strategies (Carver, Scheier, & Weintraub, 1989; Van Zuuren & Wolfs, 1991). This may be a result of the lower internal consistency of the blunting subscale compared to the monitoring subscale.

Although it will not be done in the present study, there is a need for a large sample, many variable study to investigate the various relationships outlined above. Differences in scoring and differences in cultural background are only two of the features that make comparisons difficult.

Evidence of the Predictive Validity of the MBSS

There are a number of reports in the published literature which describe predictive studies using the MBSS. The discussion of these studies is organized in terms of the aspects of Miller's hypotheses tested. Included in this section is the evidence that the MBSS scores which represent the person's cognitive informational style (CIS) predict: coping behavior, knowledge level and satisfaction, arousal responses in threat, interacting effect of CIS x situational conditions, impact and outcome of threat, and health related behaviors. Each of these areas of prediction are discussed separately in order to reveal the extent to which Miller's theoretical predictions are supported. However, because some studies bear evidence on more than one prediction, different aspects of the same study are discussed in different sections. Where this occurs, the reader is warned.

The scoring procedure applied to the MBSS varies from study to study. Some researchers have treated the monitoring and blunting subscales separately and used the monitoring and blunting scoring procedure (MBSP), others have subtracted the total blunting score from the total monitoring score (DSP: refer to Chapter II). Unless otherwise indicated, the MBSP has been used to score the MBSS and the level of significance is at alpha $\leq .05$.

Coping Behavior in Threatening Situations

Miller suggests that individuals have different cognitive informational styles which may be identified using the MBSS. Furthermore, Miller suggests that one can predict the extent to which people will monitor and distract in a threatening situation based on their MBSS scores. A limited number of studies have been conducted in which the relationship between scores on the MBSS and actual behavior in threatening situations has been examined.

Miller (1979b) investigated the predictive validity of an early version of the MBSS which consisted of one threatening situation, fear of flying, and 10 items: 5 items represented monitoring strategies, and 5 items represented blunting strategies. Sixty-eight female students were divided into monitors and blunters in the following way. Each was exposed to the threat of electrodermal shock in a series of six, 2-minute trials. None of the students was actually given a shock during the trials. During the trials, students were allowed to choose whether they wanted to listen for information about the shock or listen to music. Students who listened to information on at least 5 out of the 6 trials were classified as monitors. Students who listened to music on 6 out of the 6 trials were classified as blunters. Compared to blunters, monitors selected significantly fewer distracting strategies when presented with the fear of flying situation on the 10 items included in the preliminary version of the MBSS. However, there was no significant difference between monitors and blunters based on the number of monitoring strategies selected in the MBSS.

In a second later study in which she used the current form of the MBSS, Miller (1987) again looked at the relationship between the MBSS scores and coping behavior. Fifteen male and 15 female university students were observed while they were being exposed to the threat of electrodermal shock in a series of 4, 1-minute trials. Similar to the previous study, no shock was delivered during the trials. Again, students were allowed to choose whether they wanted to listen for information about the shock (monitor) or to listen to music (blunt). Similar to the findings from the previous study, only the blunting subscale was associated with actual coping behavior. Compared with students with high blunting scores, students with low blunting scores on the MBSS spent significantly more time listening for information about the shock. The main effect was not statistically significant for the monitoring subscale on coping behavior.

In a second phase of the research described above, Miller (1987) investigated the coping behavior of 20 male and 20 female students who were exposed to a threatening cognitive task consisting of a series of aptitude and achievement tests drawn from the Graduate Record Examination (GRE). Students were informed that the GRE predicted scholastic success, that they had 60 minutes to complete the modified GRE and that missed items would be counted against them. Within the testing room was a clock and a light which indicated their cumulative ranking compared to the average score on the GRE as they worked through the tests. A green light signified that they were above the 75th percentile and a red light indicated they had fallen below that level of performance. During the trials, the light remained green regardless of test performance. The extent to which individuals chose to monitor was determined by the amount of time spent looking at the light or the clock. In this study volunteers were not provided with an option to use an explicit external distracter. Only the monitoring subscale was predictive of the amount of time spent watching the clock or light. Compared to students with low monitoring scores on the MBSS, students with high monitoring scores spent significantly more time watching the clock or the light.

The retrospective self-reports of coping strategies used following the explosion of the Challenger were examined in a sample of 23 male and 58 female undergraduate students (Sparks & Spirek, 1988). Students were asked to respond to 3 statements using an 11-point Likert scale (0 = statement did not apply at all, 10 = the statement applied very much). The 3 statements pertained to: the extent to which they wanted to see videotape replays of the astronauts' families as they watched the launch sequence (family watch), the extent to which they wanted to see the astronauts' family members talking about their reactions to the incident, and the extent to which they wanted to hear about the reactions of school children around the country who had watched the launch sequence. Two weeks later, students were asked to complete the MBSS under the guise of another study. Based on Miller's hypotheses, it was reasoned that compared to low monitors/ high blunters, high monitors/low blunters would be more likely to seek out highly negative emotional information about the disaster. Of the 3 statements, only the statement pertaining to family watch supported their hypothesis. It may be that of the three statements, the family watch statement contained the highest level of negative emotional information.

In another study the written retrospective self-reports of strategies used by 47 university students in recently experienced threatening situations were examined (Van Zuuren

& Wolfs, 1991). The sample consisted of 31 females and 16 males. Two judges scored the written reports independently on a number of criteria using a dichotomous scoring system. Students were either classified as high or low on monitoring and high or low on blunting based on the presence or absence of monitoring and blunting strategies respectively. No significant relationship was found between the MBSS scores and the scores on the self-reports.

Conclusions and directions.

The combined results of these studies are mixed (Miller, 1979b, 1987; Sparks & Spirek, 1988; Van Zuuren & Wolfs, 1991). Although the reports of Miller's laboratory studies provide some evidence of the predictive validity of the MBSS, the current MBSS was used only in the 1987 study. Information-seeking and avoiding strategies used in physical threat may be more readily predicted using the blunting subscale whereas information-seeking and avoiding strategies used in the cognitive threat may be more readily predicted using the monitoring subscale. The hypothesis that students with high monitor/low blunter scores would be significantly more likely than low monitor/high blunter students to seek negative information about a recent disaster was only partially supported in the study by Sparks and Spirek (1988). The findings of the other field investigation (Van Zuuren & Wolfs, 1991) indicate that the MBSS is not related to information-seeking and avoiding strategies described in the retrospective self-reports of behavior during actual threatening events.

Caution should be exercised in the interpretation of these studies in light of limitations related to method. The artificial and controlled environment of the laboratory may yield results that do not represent the more complex real world. Retrospective self-reports of behavior may not represent what volunteers actually do during threat (Koman, 1991). Overall, the predictive validity evidence related to actual behavior in threat is weak. More studies of actual behavior in real life threat is required in order to strengthen the predictive validity evidence of the MBSS.

Knowledge Level and Satisfaction

Further evidence of the construct validity of the MBSS may be gleaned from studies in which individual differences in the relationships between satisfaction with information provided, factual knowledge and cognitive informational style (CIS) have been examined. Based on Miller's hypotheses it would be expected that people with high monitoring/low blunting scores on the MBSS (HM/LB) compared with those demonstrating low monitoring/high blunting (LM/HB) would show higher levels of factual knowledge and greater desire for information about threat.

Miller, Brody, and Summerton (1988) examined individual differences in health-seeking behavior and health status in a sample of 118 patients seeking medical care for an acute onset of symptoms. The results indicated that compared to patients with low monitoring scores on the MBSS, patients with high monitoring scores sought more information related to: the cause of their medical problems; their general health state; the prevention of health problems; the effects of stress on their health; and side effects of medications. These researchers indicate that although the results obtained using the blunting subscale were in the same direction, they were weaker and thus were not reported.

The self-reports of perceptions pertaining to risk information provided by health care professionals were investigated using a sample of 86 cardiac catheterization patients (Watkins, Weaver, & Odegaard,1986). The DSP was used to score the MBSS in this study. The results of the study demonstrated that monitors were significantly more likely than blunters to want risk information related to the cardiac catheterization procedure.

A sample of 40 gynaecological patients scheduled for a colposcopy procedure were asked to rate their satisfaction with the amount of information provided about the colposcopy procedure or if they would have wanted to know more (Miller & Managan, 1983). The MBSS was scored using the DSP.

Blunters were significantly more satisfied with the amount of information received about the procedure than monitors. As expected, based on Miller's hypothesis, monitors compared to blunters wanted more information and thus were less satisfied with the amount given.

In another study a group of researchers investigated the levels of factual knowledge among 71 gynaecological patients scheduled for surgery (Steptoe & O'Sullivan, 1986). The DSP was used to score the MBSS. Monitors compared to blunters were found to be significantly more knowledgeable about gynaecology than blunters. No significant differences were found between monitors and blunters in terms of desire for more information. Among monitors, there was a marginally significant tendency for factual knowledge to be associated with reported understanding ($p \leq .06$). Among blunters, there was no relationship between the stated satisfaction with information and level of knowledge (Steptoe & O'Sullivan, 1986). The researchers conclude that blunters' satisfaction with knowledge may be a function of their CIS, while monitors' satisfaction may be a product of level of knowledge (Steptoe & O'Sullivan, 1986).

A group of researchers examined the relationship between CIS and the extent to which 77 oncology patients were informed and were satisfied with communication about the causes and treatment of cancer (Steptoe, Sutcliffe, Allen, & Coombes, 1991). Both the DSP and the MBSP were determined based on responses to an abbreviated version of the MBSS. The results of the study indicated that patients who had a high monitoring score or a high difference score were significantly less satisfied with information. However, there were no significant differences found between groups based on levels of knowledge about the causes and treatments of cancer.

Conclusions and directions.

It is difficult to integrate the findings of these studies due to differences in MBSS scoring procedures used. Out of the 5 studies reported: 3 reported having used the DSP exclusively (Miller & Mangan, 1983; Steptoe & O'Sullivan, 1986; Watkins, Weaver, & Odegaard, 1986); 1 reported having examined the MBSS but only reported findings on the monitoring subscale (Miller, Brody, & Summerton, 1988); and 1 reported having used both the DSP and MBSP simultaneously, but on a condensed version of the MBSS (Steptoe, Sutcliffe, Allen, & Coombes, 1991). Nevertheless, taken together, whether using the DSP or the monitoring subscale, the results of these studies indicate that those with high scores compared with those with low scores: may report a greater desire for health related information, may be as knowledgeable or more knowledgeable about health related issues, and may be less satisfied with the amount of information provided by health care workers. This would be expected on the basis of Miller's hypothesis. However, the strength of relationships between scores on the blunting subscale with levels of knowledge and satisfaction requires clarification. Of the 5 studies, only 2 reported having examined the separate subscale scores: neither Miller and her colleagues (1988b) nor Steptoe and his colleagues (1991) report their findings in terms of the blunting subscale. Future work is required in this area to clarify the predictive validity evidence of the blunting subscale.

Arousal Responses to Stressful Events

Miller (1992) postulates that arousal increases to the extent that an individual monitors in a threatening situation. Arousal is reduced to the extent that an individual blunts in a threatening situation. Therefore, compared to individuals with low monitoring/high blunting scores on the MBSS, individuals with high monitoring/low blunting scores on the MBSS should experience significantly higher levels of arousal when threatened.

In a study described previously, Miller (1979b) compared the levels of arousal among 68 students threatened with electrodermal shock in a series of 6, 2-minute trials. A modified version of the MBSS was used in this study. Tonic and phasic electrodermal responses were used to measure physiological arousal. Subjective measurements of arousal were obtained on arrival using Spielberger's State-Trait Anxiety Inventory (SSTAI) (Spielberger, Gorsuch, & Lushene, 1970) and prior to each trial, using self-reports of tension and fear. Across trials, only blunters demonstrated significant decreases in arousal as demonstrated by electrodermal responses. Compared to blunters, monitors expressed greater fear and tension and were more state anxious.

As described previously, Miller (1987) exposed 30 students to threat of shock in a series of 4, 1-minute trials. In a second phase of this study (Miller, 1987) Miller exposed another sample of 40 students to a cognitively threatening task over a period of 40 minutes. The Multiple Affect Adjective Check List (MAACL) (Zuckerman, Lubin, & Robins, 1965) and retrospective self-ratings of tension and anxiety were used to measure psychological arousal. As expected, high monitor/low blunters compared to low monitors/high blunters experienced greater arousal during the shock trials based on both the MAACL and the self-ratings of tension and anxiety. However, during exposure to the cognitive task in the second phase, there was no significant difference in arousal responses between high monitors/low blunters and low monitors/high blunters. Miller suggests that the cognitive stressor may not have been of sufficient intensity of threat to inhibit arousal reduction on the part of high monitors/ low blunters.

Alternatively, in the latter study a danger signal light (red light) was never displayed. Thus those who chose to monitor were exposed only to the safety signal (green light) which theoretically is a condition that would not lead to increases in arousal responses.

The arousal responses of 107 male and 38 female patients were examined prior to a cardiac catheterization procedure (Davis, Maguire, & Haraphongse, 1993). Patients were classified as high or low monitors using the MBSS monitoring subscale. The SSTAI was used to measure the patient's anxiety before the cardiac catheterization. Heart rate and systolic and diastolic blood pressure were taken to determine physiological levels of arousal pre-cardiac catheterization. Physiological measures of arousal were not related to psychological measures of arousal. However, these researchers did find a significant effect of CIS on psychological arousal. Compared to low monitors, high monitors demonstrated significantly more psychological arousal based on the SSTAI.

A modified version of the MAACL and self-reports of nausea were used to examine arousal in a sample of 32 female and 16 male oncology patients prior to a chemotherapy treatment (Lerman, Rimer, Blumberg, Cristinzio, Engstrom, MacElwee, O'Connor, & Seay, 1990). Using correlation procedures, they found that higher scores on the blunting subscale were significantly associated with lower levels of state anxiety and depression and fewer episodes of nausea prior to a chemotherapy treatment. Higher scores on the monitoring subscale was related to more nausea before chemotherapy but only marginally related to more anxiety before chemotherapy.

In a another investigation, described previously, significant main effects for CIS on MAACL and on a 7-point tension/anxiety scale were found in an investigation of 40 gynaecological patients prior to colposcopy (Miller & Mangan, 1983). The DSP was used to score the MBSS. Monitors were significantly more depressed, more hostile and more tense than blunters prior to the colposcopy procedure. However, there were no significant differences in the pulse rates between the 2 groups.

A comparison was made of mood state scores on the Profile of Mood State Scales (POMS) (McNair, Lorr, & Droppleman, 1971) administered to a sample of 40 pregnant women undergoing amniocentesis and 40 pregnant women who were not undergoing the procedure (Phipps & Zinn, 1986). Using the DSP, women were classified as monitors or blunters based on the MBSS. Significant interactions were found between CIS and POMS in the former group but not in the latter. Monitors were significantly more psychologically aroused than blunters following each of the genetic counselling, the amniocentesis procedure, and communication of the amniocentesis results. The findings of this research support the notion that the MBSS predicts response to specific, highly stressful situations as opposed to more chronic daily stress.

The physiologic and psychologic anticipatory arousal responses were examined in a sample of 27 animal phobics prior to exposure to feared animals (Steketee, Bransfield, Miller, & Foa, 1989). The DSP was used to score the MBSS. Heart rate and skin conductance were used as physiological measures of arousal while self-ratings represented psychological measures of arousal. Measurements of baseline mood states were obtained using the S-R Inventory of General Trait Anxiousness (GTA) (Endler & Okada, 1975) and the Beck Depression Inventory (BDI) (Beck, Rush, Shaw, & Emery, 1979). The results of two-way ANOVA indicate that, compared to blunters, monitors experienced significantly higher levels of anxiety, higher skin conductance levels, and more spontaneous skin conduction fluctuations. There was no difference in pulse rates between the two groups. Monitors demonstrated significantly higher general anxiety than blunters but no significant differences were found in levels of depression. The authors tentatively concluded that monitors' higher levels of arousal at baseline may represent anticipatory arousal since the phobic individuals knew they would be confronted with the phobic object. It is possible that higher arousal among monitors may represent a general trait of apprehensiveness. However, the trait anxiety scores did not correlate with any of the baseline measures of arousal leaving in question the cause of higher levels of baseline arousal. Review of dependent variables within and across trials of exposure to the feared object indicated some interactions of CIS by time. Across trials, monitors' heart rate decreased while blunters' heart rate increased. A non-significant main effect of CIS on time was found within exposure trials. Monitors tended to show a decrease in self-rated anxiety while blunters demonstrated no change. Overall, caution should be exercised in interpretation of findings given the small sample size. These findings conflict with those of Miller (1979b;1987). It may be that successful treatment of animal phobics may require a more attentitive coping style. With repeated exposure, attending to the feared animal, would more likely demonstrate a lack of threat over repeated exposures.

In a study described previously, the levels of arousal were examined in a sample of 70 male and 16 female patients prior to a cardiac catheterization (Watkins, Weaver, & Odegaard, 1986). The DSP was used to score the MBSS. Prior to the procedure, the SSTAI and the MAACL were administered to evaluate psychological levels of arousal and heart rate and blood pressure were used to indicate physiological arousal. Contrary to the findings of other researchers, Watkins and his colleagues (1986) found blunters had significantly higher anxiety scores on the MAACL and the

SSTAI prior to the catheterization. However, there were no differences in the patients' heart rate and blood pressure prior to the procedure.

In another study described previously a group of researchers examined the coping strategies employed by 44 undergraduate students while viewing a frightening film (Sparks & Spirek, 1988). Five weeks prior to the viewing students were administered the MBSS. Immediately before and at 4 points during the film viewing, the student's skin conductance response was measured. At the end of the viewing students were asked to complete a self-report of emotions experienced during the viewing and interest in seeing more of the film. The results of ANOVA indicate that high monitors/low blunters demonstrated significantly higher skin conductance responses during the film segment than low monitors/high blunters. There were no significant differences found between CIS groups on self-reports of emotions. The researchers suggest that these may have been due to the fact that the self-reports were taken after the viewing. The end of the viewing may have been marked by relief which may have caused students to underestimate emotion during the film viewing.

Conclusions and directions.

The difficulty in integrating the research in which the relationship between CIS and anticipatory arousal have been examined is due to differences in the setting, a lack of consistency in the type of threat studied, the MBSS scoring procedures used, and the parameters used to measure physiological and psychological arousal. Table 6 provides a summary of the studies in which the nature of the relationship between anticipatory arousal scores and MBSS scores have been examined. Generally, where significant differences between CIS groups on arousal are present, psychological and physiological measures of arousal do not correspond. This has been noted in previous work (for a review, see Cohen, 1987). Cohen (1987) suggests there are three different domains to consider in terms of outcomes: psychological, social, and physiological. A particular strategy may have a positive outcome in one domain and a negative outcome or neutral outcome in another. There is agreement in terms of the impact on at least one physiological and one psychological parameter in 3 out of 7 studies in which both domains were observed (Lerman, Rimer, Blumberg, Cristinzio, Engstrom, MacElwee, O'Connor, & Seay, 1990; Miller, 1979b; Steketee, Bransfield, Miller, & Foa, 1989). However, in one of the 3 studies, physiological findings were conflicting (Steketee, Bransfield, Miller, & Foa, 1989).

Table 6

Comparisons of MBSS scores with Measures of Arousal

	Threat		Measures of Arousal								
Authors	Physical	Psychological	Physiological				Psychological				
			Dermal	Pulse	Blood Pressure	Other	SSTAI	MAACL	POMS	Self-report Anxiety/Tension	Other
Miller (1979) MBSP	Shock		*x				*x			*x	
Miller (1987) MBSP	Shock							**x		**x	
MBSP		Cognitive Task						x		x	x
Lerman et al. MBSP	Chemotherapy					**x		*x			
Miller et al. DSP	Colposcopy			x				*x		*x	
Phipps et al. DSP	Amniocentesis								*x		

Note. MBSP = the monitoring and blunting scoring procedure
DSP = the difference scoring procedure
* = one subscale demonstrated a significant effect ($p \leq .05$)
** = both the monitoring and blunting subscales demonstrated a significant effect ($p \leq .05$)
+ = used only the monitoring subscale scores

Table 6 (cont'd)

Comparisons of MBSS scores with Measures of Arousal

Authors	Threat		Measures of Arousal								
	Physical	Psychological	Physiological				Psychological				
			Dermal	Pulse	Blood Pressure	Other	SSTAI	MAACL	POMS	Self-report Anxiety/Tension	Other
Sparks et.al DSP		Film	*x							x	
Steketee et al. DSP	Animal phobia		*x	x				*x			*x
Watkins et al. DSP	Cardiac Catheterization			x	x		*x	*x			
Davis et al. +MBSP	Cardiac Catheterization			x	x		*x				

Note. MBSP = the monitoring and blunting scoring procedure
DSP = the difference scoring procedure
* = one subscale demonstrated a significant effect ($p \leq .05$)
** = both the monitoring and blunting subscales demonstrated a significant effect ($p \leq .05$)
+ = used only the monitoring subscale scores

The strongest support for Miller's hypotheses comes from the effect of CIS on psychological measures of arousal. The results appear to support the notion that compared to blunting, monitoring may be related to greater psychological arousal in threat. However, because 4 out of 8 studies used the DSP to score the MBSS, it is difficult to determine whether both the monitoring and blunting subscales support these findings (Miller & Mangan, 1983; Phipps & Zinn, 1986; Steketee, Bransfield, Miller, & Foa, 1989; Watkins, Weaver, & Odegaard, 1986). Two studies were reported in which the MBSP was used (Miller, 1979; 1987). However, in both of these studies the controlled conditions of the laboratory setting were used making it difficult to generalize findings to the more complex real world. More work is required to strengthen the validity evidence in relation to the impact of CIS on anticipatory arousal. Furthermore, the use of a common scoring model among researchers (i.e., the MBSP) would increase the extent to which findings could be integrated.

Interacting Effects of CIS and Situational Conditions

Based on Miller's hypothesis, those with MBSS scores demonstrating LM/HB compared to HM/LB should experience less arousal in threat when they receive threat relevant information prior to the threatening event. Alternatively, LM/HB compared to HM/LB should experience less arousal when threat-relevant information is not made available prior to the threatening event. Some researchers have similarly postulated interactive effects of other preparatory interventions (e.g., relaxation). Of 6 reports in which this prediction is tested, 4 have been discussed previously (Lerman, Rimer, Blumberg, Critinzio, Engstrom, MacElwee, O'Connor, & Seay, 1990; Miller & Mangan, 1983; Steketee, Bransfield, Miller, & Foa, 1989; and Watkins, Weaver, & Odegaard, 1986).

The interacting effect of CIS and informational preparation was investigated in a sample of 40 gynaecologic patients undergoing colposcopy (Miller & Mangan, 1983). The DSP was used to identify monitors and blunters. Half of the members of each CIS group were assigned to either a 20 minute audio-visual presentation outlining the technical procedure and the expected sensations related to the procedure (high information group) or a 20 minute audio-visual presentation on nutrition (low information group). The MAACL and a 7-point scale rating anxiety and tension were used to measure psychological arousal before and after the informational manipulation. The pulse rate change was used as an indicator of physiological arousal. Miller and Mangan (1983) found a significant interaction between CIS and treatment based on post informational manipulation change scores on pulse rate and on self-reports of anxiety on the 7-point scale only. Blunters in the low-information condition and monitors in the high information condition demonstrated a decrease in pulse and reported less anxiety prior to the colposcopy procedure. Blunters in the high-information condition and monitors in the low information condition experienced more anticipatory anxiety and higher pulse rates before the colposcopy procedure.

Pre-cardiac catheterization patients were identified as monitors and blunters using the DSP and randomly assigned to one of 3 conditions: a control group , a procedure information group, and a sensation information group (Watkins, Weaver, & Odegaard, 1986). The control group was left to derive information from interactions with health care professionals. The procedure information group viewed an audio-slide program which provided information about cardiovascular structure and about the cardiac catheterization procedure. The sensation information group received the same information as the procedure information group in addition to information about the sensations to be expected during cardiac catheterization. The SSTAI and the

MAACL were used to measure subjective arousal and the pulse and blood pressure were used to detect physiological arousal. The results of the study support Miller's hypotheses in part. At the time of catheterization, monitors provided with sensory information compared with monitors provided with procedural information experienced significantly less subjective arousal based on SSTAI and less physiological arousal based on pulse rate. Using the same subjective and physiological measures, blunters in the procedural group exhibited significantly less subjective and physiological arousal than blunters in the sensory information group. A significant interactive effect was not found for informational preparation and CIS on MAACL scores or blood pressure.

Peterson (1991) randomly assigned 72 (28 female, 44 male) patients scheduled for a cardiac catheterization to one of 3 groups: control, social intervention, and educational intervention. The control group received no additional information outside the routine. Those assigned to the social intervention were engaged in a social chat with the researcher for 30 minutes. Members of the educational intervention were given 30 minutes of sensory and procedural information about the cardiac catheterization procedure. The DSP on a modified version of the MBSS (i.e., only scores on the dentist and the airplane situation were obtained) was used to identify CIS. Anxiety was measured before and after intervention using the SSTAI. No significant differences were found between monitors' and blunters' SSTAI scores in response to control, social, or educational interventions.

Twenty-seven animal phobics were randomly assigned to either a high or a low information group prior to exposure to their feared animal (Steketee, Bransfield, Miller, & Foa, 1989). Members of the high information group received information about the feared animal and information about the exposure treatment procedure. Members of the low information group received information irrelevant to the exposure treatment. The DSP was used to score the MBSS. Heart rate and skin conductance were used as physiological measures of arousal while self-ratings represented psychological measures of arousal. Measurements of baseline mood states were obtained using the S-R Inventory of General Trait Anxiousness (GTA) and the Beck Depression Inventory (BDI). No significant interactive effect of information and CIS on pre-exposure arousal was found. Relevant information increased pre-exposure anxiety in both monitors and blunters. Steketee and her colleagues (1989) speculate that interactive effects did not appear because all animal phobics would likely have some information about their feared animal.

In another investigation, 48 male patients were randomly assigned to one of four pre-gastro-endoscopy interventions including: i) relaxation training plus self-efficacy enhancement, ii) relaxation only, iii) procedural information, and iv) control (Gattuso, Litt, & Fitzgerald, 1992). Relaxation training involved deep muscle relaxation and meditation. Self-efficacy training involved positive feedback regarding their ability to relax. The reader is referred to the definitions in Appendix A for more complete description of these treatments. The scoring procedure used for the MBSS was not described. Self-report, behavioral, and physiological measures of distress were made before and after the intervention. Psychological distress was measured with POMS. Pulse rate and frontalis muscle tension were measures of physiologic tonic arousal. It was expected that: monitors compared to blunters would demonstrate less arousal in the relaxation plus self efficacy group , and blunters compared to monitors would demonstrate less arousal in the relaxation condition. The results indicated there were no interactive effects for CIS x group on pre-endoscopy measures of arousal.

Forty-eight patients were randomly assigned to one of two groups prior to a chemotherapy treatment (Lerman, Rimer, Blumberg, Cristinzio, Engstrom, MacElwee, O'Connor, & Seay, 1990). One group received relaxation training which consisted of teaching the volunteers to focus on tensing and relaxing various muscle groups. The other group (control) received standard care consisting of an orientation to chemotherapy treatment and an educational booklet. The DSP was used to identify CIS based on the MBSS. Measurements of anticipatory anxiety and depression were obtained using the MAACL. Anticipatory episodes of nausea prior to chemotherapy were measured using a 7-point Likert scale. Only scores on the MAACL completed prior to chemotherapy indicated that blunters in the relaxation group experienced, as expected, significantly less anxiety than blunters in the control group. There were no significant differences in levels of anxiety between monitors in the relaxation and control groups. The researchers concluded that the blunting cognitive coping style may have enhanced the relaxation treatment or that relaxation itself is a distraction strategy.

Conclusions and directions.

It is difficult to integrate the findings of studies in which interacting effects on anticipatory arousal of CIS and situational factors have been examined. This is due, in part, to the variety of threat examined, the variety of interventions examined, and the variety of indicators of arousal. Although all reported having used the DSP to assign volunteers to CIS groups based on the MBSS scores, one group (Peterson, 1991) used a modified version of the MBSS. As noted previously, where several psychological and physical parameters were used to indicate arousal, all measurements did not always correspond (for example, Watkins, Weaver, & Odegaard, 1986).

Of the two studies involving threat of cardiac catheterization (Peterson, 1991; Watkins, Weaver, & Odegaard, 1986), the findings were mixed. Peterson (1991) found no significant differences in arousal responses of monitors and blunters to procedural sensory information versus unrelated information. However, Peterson (1991) used a modified MBSS. Watkins and his colleagues (1986) used two measures to examine both psychological (MAACL, SSTAI) and physical arousal (pulse, blood pressure). Only the SSTAI and the pulse demonstrated significant differences between monitors' and blunters' arousal responses to procedural sensory and procedural information. Miller and Mangan (1983) found a significant difference in pulse and self-reports of anxiety but not in MAACL scores between monitors' and blunters' responses to procedural sensory information versus unrelated information. Steketee and her colleagues (1989) found no significant difference in monitors' and blunters' anticipatory arousal response to procedural and irrelevant information prior to exposure to feared animals. They speculate that differences may not be found because phobic volunteers may already be informed about their feared animal. Gatusso and her colleagues (1992) found no interactive effect on anticipatory arousal among monitors' and blunters' arousal responses to procedural and relaxation techniques. Lerman and her colleagues (1990) found that only the blunters benefited from relaxation techniques.

Taken together these results provide modest support for the Miller's hypothesis if one can discount the findings of Peterson (1991) and Steketee and her colleagues (1989) for the reasons mentioned. Pre-cardiac catheterization and pre-colposcopy monitors compared to blunters may experience less anticipatory physiological and psychological arousal when given detailed information about the procedure and the expected sensations. Blunters compared to monitors may experience less anticipatory psychological arousal when provided with instruction on relaxation techniques prior to chemotherapy. However, relaxation techniques may not be of benefit in reducing psychological or physical arousal pre-endoscopy. Replication of these studies would be required in order to strengthen these findings.

Impact and Outcome of Stressful Events

Miller, Combs, and Stoddard (1989) suggest that individuals who are in a relaxed state when they experience a stressful event may reduce the impact of the event. Since blunting is hypothesized to reduce arousal in threat, then those who are classified as LM/HB compared to HM/LB should experience less distress during and following stressful events. Also, one would expect to find an interacting effect for CIS and situational conditions on impact and outcome of stressful events.

Prior to a cold pressor test, 85 male undergraduate students were randomly assigned to one of four conditions: i) self-observation, ii) exaggeration, iii) rational statements, and iv) control (Efran, Chorney, Ascher, & Lukens, 1989). Those in the self-observation group were required to concentrate on the sensations they were experiencing while those in the exaggeration group were asked to observe and exaggerate the experienced sensations. Students in the rational statement group were asked to focus on rational statements rather than the experience of the cold water immersion (e.g., " One of the good things about this experience.." p. 95). Finally those subjects in the control group were asked to approach the trial in a manner that would be most comfortable for them based on their own past experience. CIS was identified using the DSP. Pain threshold was defined by the time elapsed from immersion of a hand in cold water to the onset of pain. Pain tolerance was defined by the time elapsed from the onset of pain to the removal of the hand from the cold water. Volunteers rated discomfort and effectiveness of strategy used at the end of the cold water trials. Monitors' and blunters' subjective ratings of discomfort did not significantly differ. Blunters in the rational statement group demonstrated significantly higher discomfort thresholds than blunters in either of the self-observation conditions. However, monitors in the observation groups did not have significantly higher thresholds than monitors in other groups as expected. No significant interactions were found in terms of treatment, cognitive coping style and tolerance of cold pressor. The researchers suggest that differences in task definition and motivation may have masked true differences in tolerance. Some subjects appeared to view the task as a challenge as opposed to a threat.

The incidence, severity and duration of nausea and vomiting episodes were examined among a sample of 29 male and 41 female patients post chemotherapy (Gard, Edwards, Harris, & McCormack, 1988). The MBSS was administered after the chemotherapy and a ratio score was used to classify their patients as monitors or blunters. The ratio score method resulted in 97% agreement with the DSP. Post chemotherapy patients were asked to report the incidence and intensity of nausea and vomiting that was experienced before and following the chemotherapy. Compared to blunters, monitors experienced significantly more episodes of nausea which were of greater duration. A significantly larger number of monitors than blunters received anti-emetic medications.

In a study described previously, Lerman and her colleagues (1990), examined the effects of coping style on side effects of chemotherapy in a sample of 48 patients.

Self-reports of the number of episodes of nausea during chemotherapy and the duration of nausea following chemotherapy treatments were obtained. The results of correlational analyses indicate that high blunters experienced fewer episodes of nausea and experienced nausea for shorter durations post chemotherapy than did low blunters. High monitors compared to low monitors experienced more nausea during treatment.

Miller, Leinbach, & Brody (1989) investigated a sample of patients visiting a primary care facility for acute medical symptoms (Miller, Leinbach, & Brody, 1989). Twenty-five hypertensive patients were compared to a sample of 25 non-hypertensive patients matched on gender and age. Hypertensive patients were significantly more likely to demonstrate high monitoring scores than non-hypertensive patients. The researchers do not report the findings in relation to the blunting scores.

In another study described previously, Miller and Mangan (1983) investigated a sample of 40 gynaecologic patients undergoing colposcopy (Miller & Mangan, 1983). The DSP was used to classify patients as monitors or blunters. Based on the analysis of 7-point semantic differential scales, monitors expressed significantly more distress than blunters during 5 days following the colposcopy. Blunters reported a steady decrease in the amount of discomfort they experienced post colposcopy while monitors demonstrated a more gradual decline in pain and discomfort.

The arousal levels of 48 male patients were examined during a gastro-endoscopic procedure in a study described previously (Gattuso, Litt, & Fitzgerald, 1992). Patients were randomly assigned to one of four pre-gastro-endoscopy interventions including: i) relaxation training plus self-efficacy enhancement, ii) relaxation only, iii) procedural information, and iv) control. The scoring procedure used for the MBSS was not described. Behavioral distress during the procedure was measured by 2 observers who independently counted the episodes of gagging and the amount of sedation administered. Post gastro-endoscopy self-reports of anxiety were measured using the POMS. The results of ANOVA indicated an interactive effect for CIS x group on the frequency of the gagging variable only. As expected, monitors in the control group had significantly more behavioral distress than monitors in the other groups. Contrary to expectations, monitors experienced no difference in distress in the relaxation and relaxation plus self-efficacy group than in the procedural group. As expected, blunters had significantly more distress in the procedural group than in either of the relaxation groups or the control group. Contrary to predictions, differences in gagging frequency among blunters in the relaxation group, the control group and the self-efficacy enhancement group were not significant (Gatusso, Litt, & Fitzgerald, 1992). The researchers conclude that the relaxation aspects of the self-efficacy plus relaxation intervention may have provided this group with a means of distracting.

Differences between monitors' and blunters' subjective responses to four different stress management techniques were examined by Avants, Margolin and Solovey (1990). The sample consisted of 52 male and 48 female undergraduate students who were not currently experiencing distress. The MBSP was used to score the MBSS. Students were randomly assigned to one of five treatment groups including: progressive muscle relaxation, distraction imagery, focused imagery, listening to music, and sitting quietly. Distraction imagery involved creating images of scenes associated with relaxation. Focused imagery involved creating an image of a stressor and then visualizing themselves encountering the stressor feeling strong. The SSTAI was administered to the students pre- and post-intervention. As well, the students completed the Technique Evaluation Questionnaire following the intervention to evaluate the stress management technique and to provide subjective feedback on the effects of the strategies used. Anxiety was significantly reduced in all groups except the sitting quietly group. High blunters found all relaxation techniques significantly more appealing and reported significantly more somatic effects than did low blunters. Unexpectedly, the researchers found that high monitors compared to low monitors did not differ in preference for stress management techniques that focus on the reappraisal of both external environment and the internal sensations (ie. focused imagery and progressive muscle relaxation). High monitors expressed significantly more anxiety post-treatment than did low monitors.

Conclusions and directions.

Despite the variety of scoring procedures, the variety of threat, the variety of interventions and the variety of indicators of distress, the findings are somewhat congruent in that all reported some differences in distress between different CIS groups. There is some evidence to suggest that, post-chemotherapy, monitors compared to blunters experience more frequent episodes of nausea (Gard, Harris, Edwards, & McCormack, 1988; Lerman, Rimer, Blumberg, Cristinzio, Engstrom, MacElwee, O'Connor, & Seay, 1990) over a longer period (Lerman, Rimer, Blumberg, Cristinzio, Engstrom, MacElwee, O'Connor, & Seay, 1990). Monitors compared to blunters are more likely to report more discomfort and a more gradual decline in discomfort post colposcopy (Miller & Mangan, 1983). A chronic hypertensive patient is more likely to demonstrate a high monitoring score than a low monitoring score on the MBSS (Miller, Leinbach, & Brody, 1989). Monitors compared to blunters are more likely to experience more frequent gagging during an endoscopy (Gatusso, Litt, & Fitzgerald, 1992).

There is also modest support for the notion that there may be interacting effects on impact and outcome for CIS x situational conditions. Only blunters demonstrated a higher pain threshold in cold pressor trials in the rationale statement group compared to other groups (Efran, Chorney, Ascher, & Lukens, 1988). Only high blunters compared to low blunters considered a number of relaxation techniques to be more beneficial and appealing (Avants, Margolin, & Salovey, 1990). As expected, blunters experienced the most distress during endoscopy when given procedural information and monitors experienced the most distress when given no information (Gatusso, Litt, & Fitzgerald, 1992).

Further research would be required to clarify the moderating impact of CIS on impact and outcome and to identify the precise interventions which may benefit a particular CIS group.

Health Care Behavior

A number of investigators have reasoned that CIS should relate to health care behaviors. It has been speculated that HM/LB compared to LM/HB should demonstrate more vigilant health monitoring. Two published studies, discussed previously, explored the relation between health care behaviors and subsets of CIS (Miller, Brody, &

Summerton, 1988; Steptoe & O'Sullivan, 1986).

An investigation of the health care behaviors and health status was undertaken using a sample of 45 male and 73 female patients visiting a primary care institution for acute medical symptoms (Miller, Brody, & Summerton, 1988). The researchers obtained subjective assessments from the physician and the patient regarding each patient's medical and psychological problems. Based on the physician's evaluations, high monitors compared to low monitors experienced: less serious medical problems, less dysfunction, and at follow up experienced less improvement in their medical and stress-related problems. High monitors compared to low monitors wanted significantly more tests, more prescriptions, and more reassurance about the effects of stress on their health. Although, as mentioned previously, high monitors compared to low monitors wanted more information about their medical problems and preventative measures, they desired a less active role in their own care. The findings based on the blunting subscale were weaker and not reported.

The health self-monitoring practices of 71 women admitted for gynaecological surgery was examined by Steptoe and O'Sullivan, 1986. The DSP was used to identify monitors and blunters. The results indicated that monitors were more likely to seek annual cervical smears and perform regular breast self-examinations than blunters.

Conclusions and directions.

Although each study used different scoring procedures, the findings of these studies are congruent. Both provide modest evidence to suggest that high monitors compared to low monitors may engage in more health related self-monitoring and seek more evaluations of their health status by health care professionals. Further research would be required to further confirm the relationship between health care behavior and CIS groups.

Divergent Validity Evidence

Trait Anxiety

Miller (1992) suggests that CIS is a situation specific trait. Differences in physical and psychological arousal between high monitors/low blunters and low monitors/high blunters should only be evident when individuals are in a threatening situation. Therefore, one would not expect to find a significant relationship between trait anxiety and scores on the MBSS. A number of studies which have been discussed previously have compared and contrasted scores on the MBSS with measures of trait anxiety. The findings have been mixed.

In separate studies, Steketee, Bransfield, Miller, and Foa (1989) and Watkins, Weaver, and Odegaard (1986) found significant differences between monitors and blunters on trait anxiety. Using the DSP to score the MBSS, Steketee and her colleagues (1989) found that monitors compared to blunters were more trait anxious based on GTA scores. Also using the DSP to score the MBSS, in contrast, Watkins and his colleagues (1986) reported that blunters were significantly more trait anxious than monitors.

Four groups of researchers found no significant differences between monitors' and blunters' scores on trait anxiety in either threatening conditions (Davis, Maguire, & Haraphongse, 1993; Miller & Mangan, 1983; Steptoe & O'Sullivan, 1986) or non-threatening conditions (Van Zuuren & Wolfs, 1991) using either the DSP (Miller & Mangan, 1983; Steptoe & O'Sullivan, 1986) the MBSP (Van Zuuren & Wolfs, 1991) or the monitoring subscale (Davis, Maguire, & Haraphongse, 1993) to score the MBSS.

The results are mixed. Due to the variety of scoring procedures used it is difficult to integrate the findings. It would be beneficial to further investigate the relationship between MBSS scores and trait anxiety. Furthermore, it would be beneficial if some consistency in scoring the MBSS could be established among researchers.

Social Desirability

The Marlowe Crowne Social Desirability Scale (MCSDS)

(Crowne & Marlowe, 1964) was designed to identify individuals with a tendency to portray themselves positively. Since the MBSS was designed to measure preferred coping strategies in threat, MBSS scores would not be expected to be related to scores on the MCSDS. This is supported by a study of a sample of university students, reported previously, by Efran, Chorney, Ascher, and Luchens (1989). Replication would be required to increase the generalizability of these findings.

Repression-Sensitization Scale

The Repression-Sensitization Scale (S-RS) (Byrne, 1964) was developed to identify those with a tendency to avoid or become sensitized to unconscious sources of anxiety . Like the MBSS, the theory underlying the S-RS represents an approach-avoidance trait formulation to explain responses to stressful events. However, the scores on the S-RS have been found to be correlated in the .9 range with social desirability (Byrne, 1964) and with trait anxiety (Byrne, 1964; Miller & Mangan, 1983). Given the previous discussion pertaining to the inconclusive findings pertaining to the relationship between MBSS scores and scores on trait anxiety and social desirability, the S-RS scores would not be expected to be significantly related to the MBSS scores. This is supported by the results of an investigation of 40 patients pre-colposcopy (Miller & Mangan, 1983).

Depression

Since the MBSS measures preference for monitoring and blunting strategies in threatening situations, one would not expect to find a relationship between MBSS scores and scores on depression scales. However the results of published studies in which the relationship has been examined are mixed. Miller, Brody, and Summerton (1986) found a significant relationship between scores on the Beck Depression Inventory (BDI) (Beck, Rush, Shaw, & Emery, 1979) and scores on the monitoring subscale. In contrast, Steketee and her colleagues (1989) found no significant differences between monitors and blunters on BDI scores. Further research would be needed to determine the relationship between MBSS and BDI scores.

Type A Behavior

The Jenkins Activity Survey (Jenkins, Zyzanski, & Rosenman, 1971) was developed to identify individuals who typically confront life situations with a competitive, aggressive and self-confident approach (Type A) versus those who typically are less competitive, aggressive or self-confident (Type B). Type A compared to Type B personalities are more likely to actively engage in a struggle for control (Miller, Lack, & Asroff, 1985). Miller (1992) suggests that high monitors/low blunters seek information in uncontrollable threat to reduce uncertainty rather than to gain control. Low monitors/high blunters have the ability and inclination to psychologically blunt information when it is of no instrumental value. Therefore one would not expect to find a relationship between MBSS scores and Type A behavior. Although Miller (1987;1992) suggests that scores on the MBSS are not related to Type A, the details regarding the studies have not been published.

Demographic Variables

How individuals perceive the MBSS situations and respond to the MBSS items may be related to demographic variables such as age, gender, socioeconomic status, education, marital status, and race. A number of the studies discussed previously have found no relationship between scores on the MBSS and the following demographic variables: gender (Miller, 1987; Miller, Brody, & Summerton, 1988; Sparks & Spirek, 1988), age (Davis, Maguire, & Haraphongse, 1993; Miller, Brody, & Summerton, 1988; Gatusso, Litt, & Fitzgerald, 1992; Steketee, Bransfield, Miller, & Foa, 1989; Steptoe & O'Sullivan, 1986; Watkins, Weaver, & Odegaard, 1986), socioeconomic class (Steptoe, Sutcliffe, Allen, & Coombes, 1991), education (Davis, Maguire, & Haraphongse, 1993; Gatusso, Litt, & Fitzgerald, 1992; Miller, Brody, & Summerton, 1988; Miller & Mangan, 1983; Steptoe, Sutcliffe, Allen, & Coombes, 1991; Watkins, Weaver, & Odegaard, 1986), marital status (Miller, Brody, & Summerton, 1988), and race (Miller, Brody, & Summerton, 1988; Watkins, Weaver, & Odegaard, 1986).

In contrast to the findings presented above, Watkins, Weaver, and Odegaard (1986) found a greater proportion of females than males were blunters. Using the 5-point scoring system for the MBSS, Van Zuuren and Wolfs (1991) found women had significantly higher monitoring scores on the MBSS than men; they also reported a negative relationship between age and monitoring scores. Steptoe and O'Sullivan (1986) found a significant relationship between monitors (identified using the DSP) and social class, in contrast to the findings of Steptoe, Sutcliffe, Allen, and Coombes (1991). However, in the latter study, a modified version of the MBSS was used.

It would be of interest to further compare scores on the MBSS and the demographic variables of gender, age, and socioeconomic status to clarify the possible relationships. There should be an attempt in future work to be consistent in the scoring system applied to the MBSS data to facilitate comparisons of findings.

Summary, Conclusions, and Directions Based on the Literature

Miller's notion of CIS is consistent with the approach-avoidance distinction which has dominated the study of trait theory in the literature related to coping with threat. Miller puts forward a transactional model of coping behavior which is congruent with the contemporary view of the determinants of behavior. Furthermore, Miller's monitoring and blunting hypothesis compared to traditional views of coping appears to provide a better account for contradictory findings in research which have examined the preference for and the impact of information on anticipatory arousal. However, it should be kept in mind that concerns were raised in Chapter II regarding the clarity and precision of Miller's hypotheses. A number of inconsistencies within Miller's hypotheses and between Miller's hypotheses and the MBSS were discussed.

A major concern that carries into the research pertains to the dimensionality of the MBSS. Miller (1992) continues to conceptualize monitoring and blunting as if they are on a single dimension, but recommends treating the monitoring and blunting subscales in research as distinct from each other. The approaches to data analyses described in the research publications reviewed have circumvented evaluation of the implications of simultaneously having monitoring and blunting scores which are either both high or both low.

The evidential validity evidence pertaining to the content relevance and representativeness of the situations and items in the MBSS and to the internal structure of the MBSS appear to be lacking in the published literature. Although there has been a number of studies in which the external structure of the MBSS has been examined, the results have generally been mixed. A summary of the findings based on the literature review and recommendations for future research are presented below.

Only indirect evidence of the content relevance and representativeness of the situations and items in the MBSS is provided in the published literature. Further evidence of content relevance and representativeness may be gathered through investigations of: the extent to which the MBSS situations are typical of the threat encountered, the rationale for the examinees responses to the perceived characteristics of the MBSS situations, the rationale for item selection and non-selection, the technical aspects of the MBSS situations and items, the responses to MBSS situations using guided interviews, and the extent to which responses to the MBSS situations are similar to responses to other hypothetical, threatening situations. The reported results of the internal consistency of the MBSS are somewhat mixed based on studies from different samples (ie., American versus Dutch). In a Dutch sample, the internal consistency of the blunting subscale was shown to be dramatically lower than what Miller (1987) reports. Further analysis of samples representing other populations is recommended. Description of the structure of the MBSS has been limited to correlations between the monitoring and blunting subscales. The majority of research indicates these scales are not correlated. It would be of benefit to further evaluate the structure using correlation and factor analysis procedures. The convergent validity evidence reported in the literature appears to be stronger for the monitoring subscale than for the blunting subscale. This may reflect the higher internal consistency of the former compared to the latter.

Evidence of predictive validity is generally weak in terms of predicting actual behavior in threat and more research is needed in this area. There is some association between the scores on the monitoring subscale of the MBSS and desire for, knowledge of, and satisfaction with information provided in threat; it is not yet clear what, if any relationship exists between blunting and each of these three variables.

It is difficult to integrate the findings of research in which the effect of CIS on arousal has been examined. This is due to a lack of consistency in the threat conditions, the MBSS scoring procedures used, and the techniques used to measure physiological and psychological arousal. The strongest support for Miller's monitoring and blunting hypothesis appears to come from the effect of CIS on psychological measures of arousal. The evidence that exists provides some indication that monitoring appears to be more strongly associated with greater anticipatory arousal in threat than does blunting.

Research findings related to the interaction between CIS and situational factors on anticipatory arousal are also difficult to integrate. Here, there is a lack of consistency in the informational preparations manipulated in addition to a lack of consistency of the threat context, MBSS scoring procedures, and indicators of arousal. Overall, the results of the studies are mixed. Replication is required to clarify interaction effects of informational preparation and CIS on arousal.

There is some modest support for the notion that high monitors/low blunters (HM/LB) compared to low monitors/high blunters (LM/HB) may experience more distress during and following stressful events. Also, as expected, HM/LB compared to LM/HB may engage in more vigilant health monitoring. Again, replication would be required to strengthen these findings.

Although it has been demonstrated that a number of trait measures and demographics are unrelated to the MBSS as expected (for e.g., social desirability, repression-sensitization, type A) limited details regarding the findings have been published. The relationships between CIS and depression, trait anxiety, socioeconomic status, age, and gender in particular warrant further exploration.

Research Questions

Necessarily, given time constraints and the nature and scope of the validation process, this research project could not examine all of the issues identified and discussed in the literature review. Instead, attention was paid to the conceptualization and operationalization of the construct of cognitive informational style based upon the work of Miller. More specifically the questions addressed were:

1) What is the internal structure of the MBSS?
2) To what extent are the items in the MBSS relevant and representative of monitoring and blunting strategies?
3) To what extent are the situations in the MBSS relevant and representative of threatening situations?
4) What is the extent to which the MBSS predicts coping strategies used across another series of hypothetical, threatening situations?

By addressing these questions in a systematic and thorough way, the validity of the MBSS would be closely examined and extended, thereby providing greater understanding of the construct of cognitive informational style.

CHAPTER IV

SUBSTUDY I

Purpose of Substudy I

The main purpose of Substudy I was to administer the MBSS to assess the validity of the structure of the MBSS and to evaluate the congruency of scoring models with Miller's theory. A second purpose was to investigate the relationship between the MBSS scores and demographic variables.

Method

Population and Sample

In keeping with Miller's work, the target population for Substudy I was university students enroled in undergraduate courses. Selecting a sample with similar characteristics to Miller's sample increased the extent to which the findings from this work could be compared with Miller's work.

Given that the MBSS contains 32 items, and knowing that to fully assess the internal structure of the MBSS it would be appropriate to employ factor analysis, it was determined that a sample size of at least 200 students would be needed

(Gorsuch, 1983). Based on consultations with professors who had previous experience in surveying students attending the University of Alberta, it was anticipated that the response rate would be between 10% to 30% of all students canvassed. Therefore, it was calculated that approximately 1000 students would be needed in order to obtain the desired sample size.

Given time constraints, it was necessary to obtain the sample during the summer of 1991. To expedite awareness of the research project and to facilitate recruitment among potential volunteers, students were approached by the researcher during their class time. Classes were selected from courses offered by the faculties of education, arts, and science. These three faculties have large summer school enrolments. The classes that were selected contained students who, it was anticipated, would have an interest in human coping.

Measures

Miller Behavioral Style Scale

As described in a previous chapter, the MBSS consists of 32 items organized in terms of four vignettes. A copy of the MBSS is presented in Table 1, Chapter II.

General Information Form

The General Information Form was used to collect the following demographic information and data: name, address, telephone number, age, gender, year of program of study, faculty, highest level of education, religion, church attendance, culture, and number of years lived in Alberta. This information and data were collected to provide a means of contacting students who volunteered for follow up interviews and to investigate relationships with MBSS scores.

It was anticipated that as individuals increase in age, the intensity of perceived threat associated with common situations would diminish, making it easier to blunt. Also, increased learning associated with increasing age and the accumulation of life experiences may reduce the need to monitor in common threatening situations (Folkman, Lazarus, Scott, Pimley, & Novacek, 1987). Further, there may be gender differences in how individuals perceive situations that result in differences in the use of monitoring and blunting strategies.

Procedures

Professors teaching the selected undergraduate courses were contacted by telephone by the researcher to obtain permission to use 10 minutes of classroom time to recruit volunteers to participate in the study. The researcher used the class time to briefly explain the purpose of the study, to explain the volunteer's role in the study, and to distribute an instructional package to those students interested in participating in the study. The instructional package included an abstract of the study, a consent form, the MBSS, and the General Information Form (Appendix B). Students who wished to participate in the study were asked to read the instructions carefully, to sign the consent form, and complete the MBSS and the General Information Form in their spare time prior to the next scheduled meeting of the class. Students completing the consent form were also asked to indicate whether or not they would be willing to participate in a follow up interview to be conducted at a later date.

Completed materials were collected by the researcher just prior to or at the end of the next scheduled meeting of the class. Students who required additional time were asked to return their completed materials to the researcher within 10 days either by returning the package through the campus mailing service or by personally delivering the materials to a specified mailbox on campus.

Data Preparation and Analysis

Data obtained from the MBSS and the General Information Form were coded and entered into a computer file with %100 verification. The SPSSX Information Analysis System (SPSS Inc., 1986) was used to analyze the data.

The total monitoring and blunting scores were determined for each student. Using Frequencies and Descriptive Statistics from SPSSX, the mean and median of the MBSS data were calculated to help determine the cut-off scores for categorizing monitoring and blunting scores as either high or low. Aspects of the structure of the MBSS were evaluated by examining the frequency of response to each item, internal consistency coefficients (Cronbach's Alpha), and factor structure of the MBSS.

Given the construction of MBSS, the 32 items could produce a factor structure of either two or four factors: two factors representing coping strategies, and four factors representing situations. Basically, Miller's theory would argue for a two factor solution. Items representing typical monitoring strategies used in threat should be homogeneous, highly correlated, and load on a factor. Similarly, items representing typical blunting strategies used in threat should be homogeneous, highly correlated and load on a second factor. According to Miller, situational characteristics also determine the extent to which monitoring and blunting strategies are used in different situations. Unique application of monitoring and blunting should occur in the four different situations. Thus items within different situations could be related and load on four different situation factors. While it is possible that an eight factor solution (four situations by two modes of coping) might describe the relationship amongst items, it was felt that such a solution would not be theoretically decisive in assessing Miller's approach and so the initial structural investigation focused on two and four factors.

Ethical Considerations

Prior to data collection, ethical clearance was obtained from the Department of Educational Psychology Research and Ethics Committee to conduct the research. Permission to use class time for recruiting volunteers was obtained by telephone from all the professors and lecturers teaching the pre-selected undergraduate classes. Classroom time was used to explain the purpose of the substudy and to emphasize the voluntary nature of participation. It was emphasized to students that their participation or lack of participation would have no bearing on their grade in the course. All volunteers were provided with a consent form which outlined the nature of their role in the research and indicated that they could withdraw from the study at any time. All volunteers were assured anonymity and confidentiality. Any identifying criteria were kept in a locked file and will be destroyed within 5 years of the completion of the study. Students were advised that student services would be available to help them deal with any untoward feelings that might arise from their participation in any portion of the study.

Results

Sample

Forty-one classroom visits were made which provided access to a total of 800 students. A list of the number of classes, departments and faculties approached is presented in Table 7.

Table 7

Summer Session Classes

Faculty	Department	Number of Classes
Arts	Anthropology	3
	Christian Theology	1
	Economics	5
	Native Studies	1
	Political Science	1
	Religious Studies	2
	Sociology	12
Education	Educational Foundations	4
	Educational Psychology	6
	Elementary Education	2
	Secondary Education	1
Science	Statistics & Applied Probability	2
	Computing Science	1

Of the 800 students canvassed to recruit volunteers in Substudy I, 271 (33.9%) students completed the MBSS. For clarity, this group of volunteers will be referred to as the MBSS Group.

The demographic characteristics of the MBSS group are summarized in Table 8. Of the 260 students who provided gender data, 204 (78.5%) were females and 56 (21.5%) were males. The ages of the 254 students who reported their age ranged from 18 to 69 with a mean age of 29.0 years. Based on data from 264 students who reported the number of years they had lived in Alberta, the average number of years lived in Alberta was 20.7 years with a range from 1 to 67 years. Although the courses were taught by the faculties of Arts, Education, and Science, the students were enroled in other faculties as well. The distribution of students (n = 261) across faculty was: education (n = 107), arts (n = 73), nursing (n = 25), science (n = 21), business (n = 11), unclassified (n = 6), engineering (n = 3), law (n = 3), St. Jean (n = 2), native studies (n = 2), agriculture (n = 2), physical education and recreation (n = 2), graduate studies (n = 2), economics (n = 1), and rehabilitation medicine (n = 1).

Of the 271 students who completed the MBSS, 121 (44.6%) volunteered to participate in follow up interviews, conducted in Substudies IV and V.

Table 8

Demographic Characteristics of the MBSS Group

(n = 271)

	Number	Percent
Gender (n = 260)		
Female	204	78.5
Male	56	21.5
Age (n = 254)		
Mean age in Years	29.	
Range in Years	18-69	
Years in Alberta (n =264)		
Mean	20.7	
Range	1-67	
Faculty (n = 261)		
Education	107	41.0
Arts	73	28.0
Nursing	25	9.6
Science	21	8.0
Business	11	4.2
Unclassified	6	2.3
Engineering	3	1.2
Law	3	1.2
St. Jean	2	0.8
Native Studies	2	0.8
Agriculture	2	0.8
Physical Education and Recreation	2	0.8
Graduate Studies	2	0.8
Economics	1	0.4
Rehabilitation Medicine	1	0.4

Evaluation of the Scoring Model and Structure of the MBSS

The MBSS data were examined to determine the number of cognitive informational style categories represented in the MBSS group and to determine the structure of the MBSS. The results of these analyses are presented in the following pages.

Cognitive Informational Style Categories and the MBSS Scoring Model

The mean and standard deviation for the total monitoring were, respectively, 9.68 and 2.84; the corresponding values for the total blunting were 3.44 and 2.24 (Table 9). The medians were 10 and 3 respectively. These values are similar to the mean and median reported by previous researchers (Table 3, Chapter III). The correlation between the monitoring and blunting subscales was -.23 ($p \leq .23$).

Coping styles have typically been defined by cutting scores located by the mean or median of the total monitoring and blunting scores (Miller, 1987). Although a strong case could be made to distinguish monitors and blunters by insisting that they be separated by a reliable distance on the score continuum, it was decided that following Miller's procedure as closely as possible would provide the best test of her theory. Using the mean monitoring score of 9.68 as a cut-off score, all students who obtained a monitoring score equal to or above 10 were classified as high monitors while the remainder were classified as low monitors. Similarly, the mean blunting score of 3.44 was used as a cut-off. Those with a blunting score equal to or above 4 were classified as high blunters while the remainder were classified as low blunters. Employing this scoring system, 72 (26.6%) students were categorized as High Monitors/Low Blunters, 86 (31.7%) students were categorized as Low Monitors/High Blunters , 82 (30.2%) students were categorized as High Monitors/High Blunters, and 31 (11.4%) students were categorized as Low Monitors/Low Blunters.

Table 9

Cognitive Informational Style Categories Represented by MBSS Scores of the Sample in Substudy I (n = 271)

		Monitoring Subscale			Blunting Subscale		
	n	Mean	SD	Median	Mean	SD	Median
Total	271	9.68	2.8	10.0	3.44	2.2	3.0
Category							
HM/LB	72	11.86	1.6	12.0	1.32	0.7	1.0
LM/HB	86	7.13	1.9	8.0	5.00	2.0	5.0
HM/HB	82	11.50	1.5	11.0	4.43	1.6	4.0
LM/LB	31	6.94	2.0	8.0	1.42	0.8	2.0

Note. HM/LB = High Monitoring/Low Blunting
LM/HB = Low Monitor/High Blunter
HM/HB = High Monitor/High Blunter
LM/LB = Low Monitor/Low Blunter

These findings demonstrate that students in the MBSS group fall into four different categories of cognitive informational styles based on total monitoring and blunting scores. Miller suggests that MBSS users examine the subscales separately. But through the monitoring and blunting hypothesis, Miller describes monitoring and blunting as if they are on a continuum. This would suggest that individuals should fall into either the HM/LB or the LM/HB category. However, the fact that 113 students were placed in either the HM/HB or LM/LB category indicates a flaw in Miller's monitoring and blunting hypothesis.

The Structure of the Miller Behavioral Style Scale

Item response frequencies.

Analysis of the frequency of response to each item provides an indication of the item's relevance. The response frequencies for each of the 16 monitoring items (M1 to M16) in the MBSS are presented in Table 10, and the response frequencies for the 16 blunting items (B1 to B16) are presented in Table 11. The mean number of responses for the monitoring items was 164.1 (60.5%) with a range from 20 (7.4%) to 232 (85.6%) students. The mean number of responses for the 16 blunting items was 58.2 (21.5%) with a range from 9 (3.3%) to 151 (55.7%) students. Only one monitoring item, M4, was selected by fewer than 25% of the sample of students. By contrast, there were 9 blunting items which drew fewer than 25% of the possible respondents (B1, B3, B4, B5, B7, B10, B11, B14, and B15).

Table 10

Response Frequencies for Monitoring Items

Situation	Item	Response Frequency		Item
		f	%	
Dentist				
"Vividly imagine that you are afraid of the dentist and have to get some dental work done."	M1	223	82.3	I would ask the dentist exactly what he was going to do.
	M2	133	49.1	I would want the dentist to tell me when I would feel pain.
	M3	132	48.7	I would watch all of the dentist's movements and listen for the sound of of his drill.
	M4	20	7.4	I would watch the flow of water from my mouth to see if it contained blood.
Hostage				
"Vividly imagine that you are being held hostage by a group of armed terrorists in a public building."	M5	202	74.5	I would stay alert and try to keep myself from falling asleep.
	M6	186	68.6	If there were a radio present, I would I would stay near it and listen to the bulletins about what the police are doing.
	M7	226	83.4	I would watch every movement of my captors and keep an eye on their weapons.
	M8	232	85.6	I would make sure I knew where any possible exits were.

Note. M1 - M8 = Monitoring items 1 to 8

Table 10 continues

Table 10 continued

Response Frequencies for Monitoring Items

Situation	Item	Response Frequency		Item
		f	%	
Layoff				
"Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about layoffs will be announced in several days."	M9	94	34.7	I would talk to my fellow workers and see if they knew anything about what the supervisor's evaluation of me said.
	M10	219	80.8	I would review the list of my duties of my present job and try to figure out if I had fulfilled them all.
	M11	157	57.9	I would try to remember any argument or disagreement I might have had with my supervisor that might have lowered his opinion of me.
	M12	155	57.2	I would try to think which employee in in the department the supervisor might have thought had done the worst job.
Airplane				
"Vividly imagine that you are on an airplane, 30 minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced that all is well.	M13	211	77.8	I would carefully read the information provided about safety features in the airplane and try to make sure I knew where the emergency exits were.
	M14	74	27.3	I would call for the stewardess and ask her exactly what the problem was.
	M15	210	77.5	I would listen carefully to the engines for unusual sounds and would watch the crew to see if their behavior was out of the ordinary.
	M16	151	55.7	I would talk to the person beside me what might be wrong.

Note. M9 - M16 = Monitoring items 9 to 16

Table 11

Response Frequencies for Blunting Items

Situation	Item	Response Frequency f	%	Item
Dentist				
"Vividly imagine that you are afraid of the dentist and have to get some dental work done."	B1	12	4.4	I would take a tranquillizer or have a drink before going.
	B2	130	48.0	I would try to think about pleasant memories.
	B3	31	11.4	I would try to sleep.
	B4	53	19.6	I would do mental puzzles.
Hostage				
"Vividly imagine that you are being held hostage by a group of armed terrorists in a public building."	B5	19	7.0	I would sit by myself and have as many daydreams and fantasies as I could.
	B6	82	30.2	I would exchange life stories with other hostages.
	B7	9	3.3	I would try to sleep as much as possible.
	B8	98	36.2	I would think about how nice it is going to be when I get home.

Note. B1 - B8 = Blunting Items 1 to 8

Table 11 continues

Table 11 continued

Response Frequencies for Blunting Items

Situation	Item	Response Frequency		Item
		f	%	
Layoff				
"Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about layoffs will be announced in several days."	B9	73	27.0	I would go to the movies to take my mind off of things.
	B10	34	12.5	I would push all thought of being laid off out of my mind.
	B11	19	7.0	I would tell my spouse that I would rather not discuss my chances of being laid off.
	B12	151	55.7	I would continue doing my work as if nothing special was going on. have thought had done the worst job.
Airplane				
"Vividly imagine that you are on an airplane, 30 minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced that all is well.	B13	76	28.0	I would make small talk with the passenger beside me.
	B14	50	18.4	I would watch the in-flight movie, even if I had seen it before.
	B15	21	7.7	I would order a drink or tranquillizer from the stewardess.
	B16	74	24.3	I would settle down and read a book or magazine or write a letter.

Note. B9 - B16= Blunting items 9 to 16

Item M4 may be unrealistic in view of modern technology because most dentists use a non-transparent suctioning device to facilitate expectoration which reduces the likelihood of the patient seeing blood tinged saliva and mucous. Item M9 had a response rate of 34.7%. This item may not reflect the confidential nature of evaluations so that in theory, fellow workers would have no information about what the supervisor's evaluation includes. Item M14 had a response rate of 27.3%. Again, this item may not reflect reality. Few would expect that the stewardess would know "exactly what the problem was " and thus, few would ask for such precise information.

Closer examination of the 9 blunting items with response rates of less than 25% reveals some plausible reasons for their lack of popularity. Items B1 and B15 describe strategies in which alcohol or drugs would be used. These items may have attracted few responses due to the response bias associated with social desirability. An additional concern about items B1 and B15 is that they each describe two strategies (ie., take a tranquillizer or have a drink). Including two strategies in one item may render the item ambiguous. Further, in the context of the airplane situation, in reality, a passenger could not 'order a tranquillizer' from the stewardess and in turbulent conditions, drinks are generally not available. Items B3 and B7 describe the strategy of sleeping. Sleeping would seem to be an absurd strategy given the contexts. In the dentist situation, it is difficult to imagine that a patient could sleep while the dentist worked. Further, a certain degree of cooperation is required of the patient which would not allow opportunity for sleeping. In the hostage situation it seems more likely that hostages would find it difficult to sleep because of the intensity of the threat. If sleep occurred it would likely result from exhaustion rather than from an intentional act to cognitively avoid the threatening situation. Item B5, which refers to daydreaming, also may be difficult to apply in the hostage situation due to the intensity of threat. Furthermore a hostage may not have the option of sitting apart from others. Since item B5 includes two strategies, 'sitting by yourself' and 'having daydreams and fantasies', it may be ambiguous. Item B4 and item B10 describe abstract strategies. Not surprisingly, items B4 and B10 drew fewer responses than the more concrete and more pleasurable strategies described in item B2 and item B9. Item B11 contains a reference to a specific person; as such, those people without spouses may have avoided this item despite being a blunter. Item B14, which refers to watching the inflight movie, may represent a source of irritation as opposed to a source of distraction. It may be difficult to see or hear inflight movies. The opportunity to use the inflight movie as a source of distraction is limited to when it is scheduled. Compared to watching a movie, there is greater opportunity to engage other sources of distraction such as talking to a fellow passenger (B13) or reading (B16).

The totals, means, and standard deviations for monitoring and blunting by situations are presented in Table 12. The lowest total monitoring response rate by situation was for the dentist situation. A total of 508 monitoring responses were made in the dentist situation with a mean response rate of 1.87 and a standard deviation of 1.0. The highest monitoring response rate was for the hostage situation which drew a total of 846 responses with a mean response rate of 3.12 and a standard deviation of 1.0. By contrast, the lowest total blunting response rate was for the hostage situation which drew a total of 208 responses with a mean of .77 and a standard deviation of 0.8. The highest blunting response rate was for the layoff situation which evoked 277 responses with a mean of 1.02 and a standard deviation of 0.9.

These findings are congruent with the findings of previous researchers only in terms of the total monitoring scores for the situations. At the situation level, both Van Zuuren and Wolfs (1991) and Steptoe (1989) reported higher monitoring scores for the hostage and the airplane situations than for the dentist and the layoff situations. However, only Van Zuuren and Wolfs (1991) reported higher blunting scores for the layoff situation than for the hostage situation. Different response rates among different populations would be expected. The relevance of the MBSS situations may vary from population to population based on differences in everyday experience.

Table 12

Totals, Means and Standard Deviations for Monitoring and Blunting by Situations (n = 271)

	Monitoring			Blunting		
Situation	Total	Mean	SD	Total	Mean	SD
Dentist	508	1.87	1.0	226	0.83	0.8
Hostage	846	3.12	1.0	208	0.77	0.8
Layoff	625	2.31	1.2	277	1.02	0.9
Airplane	646	2.38	1.0	221	0.82	0.9

Item Correlations.

The alpha coefficients for the 16 monitoring and the 16 blunting items were .66 and .58 respectively. Both of the alpha coefficients reported in this study are lower than coefficients for total monitoring (.79, .75) and for total blunting (.69, .67) reported by Miller in her two part study (1987) (see Table 3). However the alpha coefficient for the blunting items in this study is higher than the alpha coefficient of .33 for total blunting reported by Van Zuuren and Wolfs (1991) (see Table 3). It may be that the results conflict as a result of differences in the characteristics of the samples used in the different studies. Miller (1987) presented data based on sample sizes of 30 and 40 undergraduate students in the United States. Van Zuuren's and Wolf's (1991) sample consisted of 47 Dutch undergraduate students. In this study, the sample consisted of 271 Canadian students enroled in undergraduate courses.

The low internal consistencies for the monitoring and blunting subscales raise concern about using a single cut score to separate high and low monitors and to separate high and low blunters. Considering standard error of measurement and given an infinite number of MBSS tests with a monitoring score of 9 we could be 95% confident that the true score for monitoring lies between between 5.8 and 12.2. Similarly, given an infinite number of MBSS tests with a blunting score of 4 we could be 95% confident that the true blunting score lies between 1.2 and 6.8.

The phi coefficients among the 16 monitoring items , the 16 blunting items, and the 32 monitoring and blunting items across the 4 situations are presented in Tables 13, 14, and 15 respectively. The correlations were generally weak. Of the 496 values, 460 values fell between +.2 and -.2 and only 8 values were larger than ± .3. From Tables 10 and 11 it is clear that the marginal values for the items vary greatly. Thus the maximum possible value for the correlations is often very low (i.e., the theoretical maximum value is not 1, but a value less than one). No data on individual item correlations are available in the literature so comparisons are not possible. Based on the very low item correlations, it was decided to factor the MBSS by situations rather than by items.

Table 13

Correlations Between Monitoring Items

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
M1																
M2	069															
M3	046	136														
M4	057	-023	*233													
M5	-027	048	061	133												
M6	103	011	118	100	171											
M7	131	121	137	088	* 194	* 190										
M8	168	-060	084	116	171	* 244	* 241									
M9	-027	-002	081	061	070	075	167	056								
M10	-005	066	006	-006	124	115	060	121	040							
M11	-043	119	* 217	* 183	154	* 197	* 202	* 183	* 260	* 344						
M12	-089	074	097	130	111	155	135	092	176	* 222	* 396					
M13	102	044	004	082	158	* 214	168	161	015	* 192	140	-066				
M14	111	127	032	-015	168	147	073	133	162	088	019	-022	068			
M15	-019	105	* 189	118	131	093	* 258	* 232	022	164	* 346	* 266	* 181	112		
M16	-122	117	111	110	076	102	101	037	* 244	037	* 204	130	061	130	160	

Note: Leading decimals omitted. M1 - M16 = Monitoring Items 1 to 16
* 1-tailed significance level ≤ 0.001

Table 14

Correlations Between Blunting Items

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16
B1																
B2	081															
B3	092	142														
B4	-061	160	-060													
B5	011	141	083	010												
B6	092	091	142	121	039											
B7	060	028	063	-040	030	102										
B8	-050	061	019	016	154	089	032									
B9	031	116	095	141	061	071	120	114								
B10	135	060	109	-018	027	-031	116	086	* 222							
B11	011	084	083	083	-019	008	030	034	-069	071						
B12	047	008	017	009	012	037	124	022	123	* 203	-046					
B13	-134	075	111	065	118	* 215	022	128	139	136	118	027				
B14	-010	096	128	125	168	-023	071	137	* 354	136	056	022	* 254			
B15	-062	026	* 199	066	083	019	023	098	073	057	083	008	126	111		
B16	-051	158	118	136	124	083	025	159	* 244	068	-038	079	041	* 200	101	

Note: Leading decimals omitted. B1 - B16 = Blunting Items 1 to 16.
* 1-tailed significance level ≤ 0.001

Table 15

Correlations Between Monitoring and Blunting Items

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
B1	-135	-104	-066	-061	002	-009	-000	037	069	014	002	005	028	-051	116	-025
B2	-154	-071	*-359	-045	-015	012	*-187	-111	-017	036	-109	-005	067	-075	-137	-096
B3	-137	018	*-211	-057	050	018	067	015	055	057	071	-064	024	066	-001	064
B4	-088	*-186	*-183	-068	-011	073	-005	096	-008	098	024	051	084	-031	-002	-029
B5	-062	-067	-007	-078	*-238	-126	-111	-093	-018	-050	-030	121	-097	026	-060	-104
B6	-073	-068	-128	-063	-168	-143	*-181	-073	094	035	-024	002	061	-043	-010	086
B7	-076	065	-098	-052	*-223	-052	-139	-041	-092	-067	-176	-131	-000	071	-048	041
B8	128	014	066	140	-107	012	-077	-063	048	113	035	077	050	021	-054	068
B9	042	-047	024	051	-027	-002	003	059	-006	-127	*-224	*-214	043	020	-131	-078
B10	059	-104	-057	-022	068	-032	-011	-035	-136	-155	*-354	*-258	014	068	-169	-066
B11	014	048	022	-022	061	092	006	030	-018	024	029	004	007	091	010	-017
B12	092	058	-082	-061	-061	-058	021	-006	*-302	*-189	*-323	*-276	079	146	-125	-062
B13	010	028	082	044	007	-074	014	-025	080	075	-017	009	016	-051	-175	-006
B14	071	066	-045	011	-028	014	-018	-049	-027	038	-076	-069	-021	-142	-154	*-208
B15	-010	-008	-006	077	106	077	018	119	079	036	023	111	-145	070	-042	-131
B16	111	-105	-084	-046	-117	057	-016	-056	-099	-038	-082	-123	-092	-171	*-284	*-237

Note: Leading decimals omitted. M1 - M16= Monitoring Items 1 to 16
B1 - B16 = Blunting Items 1 to 16.
* 1-tailed significance level ≤ 0.001

Situation by strategy correlations.

The examination of situation by strategy correlations is much like Campbell and Fiske's (1967) multitrait-multimethod approach to validity. In the context of this study, situations can be thought of as methods, and blunting and monitoring as traits. The multitrait-multisituation correlation matrix is shown in Table 16. The alpha coefficients for monitoring and blunting by situation are presented in the primary diagonal. Of these coefficients, the 2 highest are for monitoring in situations 2 and 3. By contrast the 2 lowest alpha coefficients are for blunting in situations 1 and 2. Heterotrait-monosituation coefficients are shown in the diagonal between the triangles enclosed by broken lines. As expected, these values are all negative and statistically significant. The monotrait-heterosituation component of the matrix is represented by the triangles enclosed in solid lines. The upper left triangle and the lower right triangle represent the monitoring and blunting traits respectively. As expected, all but one of the coefficients for both the monitoring and blunting traits are significantly greater than zero. The triangles enclosed in the broken lines represent multitrait-multisituation coefficients. As expected, all these coefficients are near zero. Since the values for the heterotrait-monosituation coefficients are higher in absolute value than the majority of the monotrait-multisituation coefficients, it is concluded that situations are more salient than traits.

Table 16

Correlation Matrix of Total Monitoring and Blunting Scores By Situations (n = 271)

	MS1	MS2	MS3	MS4	BS1	BS2	BS3	BS4
MS1	.27							
MS2	*0.21	.49						
MS3	0.15	*0.30	.56					
MS4	*0.21	*0.37	*0.32	.35				
BS1	*-.41	-.01	0.03	-.03	.22			
BS2	-.05	*-.29	0.04.	0.02	*0.18	.23		
BS3	-.00	0.00	*-.47	-.04	*0.18	0.15	.29	
BS4	0.02	-.02	-.03	*-.33	*0.24	*0.29	*0.30	.38

Note. * P = ≤.001

MS1 to MS4 = total monitoring scores for situations 1 (dentist), 2 (hostage), 3 (layoff), and 4 (airplane)

BS1 to BS4 = total blunting scores for situations 1 to 4

Triangle within a solid line = monotrait- heterosituation

Triangle within a broken line = heterotrait- heterosituation

The primary diagonal contains the internal consistencies for the monitoring and blunting items within situations

Confirmatory factor analysis.

Two different models were applied to the situation by strategy correlation matrix using LISREL (Joreskog, 1966), a two factor and a four factor solution. Given the MBSS is comprised of monitoring and blunting items it was reasoned that the monitoring items would load on one factor and the blunting items would load on a second factor. Since the monitoring and blunting subscales were shown to be minimally correlated, the factors were not allowed to correlate. The two factor model did not fit the data. Allowing the factors to correlate, a four factor solution was tested. It was reasoned that the four situations in the MBSS would load on four factors. Since the strategies across situations are related (ie., monitoring and blunting), the factors were allowed to correlate. The results for both models were significant ($p \leq .001$). Therefore, it was concluded that neither the two factor nor the four factor model fit the data.

Exploratory factor analyses.

Since neither the hypothesized two factor or four factor solution fit the data, it was decided to explore the structure using principal component analysis. The roots from a PC analysis of the situation by strategy correlation matrix (see Table 16) were 2.13, 1.38, 1.29, 1.13, .96, .46, .34, and .31. Using the scree test, three factors were retained and transformed using a direct oblimin transformation (Jennrich & Sampson, 1966). Based on the finding of four roots greater than one, four factors were retained and transformed using a direct oblimin transformation. In both the three and four factor solutions, it was anticipated that there would be some correlation between factors as a result of the common feature between the strategies. Compared to the three factor solution, the four factor solution was more interpretable. Therefore, only the four factor solution is discussed below.

The pattern matrix using the four factor solution is shown in Table 17. Although weak, there is a hint of factor structure based on both traits and situations. A factor for monitoring items and a factor for blunting items is evident. The total monitoring scores for the hostage situation (MS2), the layoff situation (MS3), and the airplane situation (MS4) loaded on Factor I while the blunting scores for the hostage situation (BS2) and the airplane situation (BS4) loaded on Factor IV. The other two factors fit with a notion of situation factors. The total monitoring scores and the total blunting scores for the dentist situation (MS1, BS1) load on Factor II while the total monitoring score and the total blunting score for the layoff situation (MS3, BS3) load on Factor III. This might be expected given that the strongest multitrait-monosituation coefficients in the situation by strategy correlation matrix in Table 16 were among monitoring and blunting scores for the dentist and the layoff situations (MS1, BS1: r= -.41; MS3, BS3: r= -.47). Furthermore, the dentist situation and the layoff situation may be more common situations encountered in the everyday experiences of North Americans. Hostage incidents and airplane disasters may be more remote or abstract to many North Americans.

A review of the factor correlation matrix presented in Table 18 provides evidence that the factors are minimally correlated. None of the correlations between factors exceeds .12 in absolute value.

Table 17

Pattern Matrix for a Four Factor Solution Using Principal Component Factor Analysis with an Oblique Transformation

	Factor			
	I	II	III	IV
MS1	.247	-.845	.056	.217
MS2	.852	.016	.131	-.151
MS3	.415	-.012	-.738	.256
MS4	.715	-.030	-.159	-.067
BS1	.220	.831	.077	.232
BS2	-.181	.030	-.168	.801
BS3	.159	.042	.871	.195
BS4	-.033	.003	.289	.726

Note. MS1 to MS4 = total monitoring scores for each of the 4 situations in the Miller Behavioral Style Scale BS1 to BS4 = total blunting scores for each of the 4 situations in the Miller Behavioral Style Scale Situation 1 (dentist), Situation 2 (hostage), Situation 3 (layoff), and Situation 4 (airplane).

Table 18

Factor Correlation Matrix

	Factor			
	I	II	III	IV
I	1.000			
II	-.112	1.000		
III	-.116	.066	1.000	
IV	-.011	.119	-.088	1.000

Note. The residuals between the observed correlations and the reproduced correlations for the four factor analysis are included in Table 19. Sixty-seven percent of the residuals are greater than .05 which, considering the fact that 12 of the 28 correlations were .05 or less to begin with, indicate that the fit is modest at best.

Table 19

Residuals between the Observed and Reproduced Correlation Matrixes

	MS1	MS2	MS3	MS4	BS1	BS2	BS3
MS1							
MS2	-.064						
MS3	-.014	. 002					
MS4	-.044	-.240	-.148				
BS1	.184	-.062	-.021	-.044			
BS2	-.060	-.016	-.141	.192	-.068		
BS3	-.033	-.113	.081	.087	-.046	-.078	
BS4	-.051	.117	.067	-.167	-.038	-.268	-.152

Note. MS1 - MS4 = total monitoring scores for situations 1 (dentist), 2 (hostage), 3 (layoff), and 4 (airplane)

BS1 - BS4 = total blunting scores for situations 1 to 4

67% of the residuals are > .05

Although there are only two factors associated with the situations, the results do provide modest support for the proposed structure consisting of a monitoring and blunting factor and situation factors. The low internal consistencies of monitoring and blunting within situations may be relevant here.

Relations Between MBSS and Demographic Variables

The results of Pearson correlation procedures indicate there is no significant relationship between age and total monitoring ($n = 271$, $r = - 0.018$, $p \leq .38$) or total blunting ($n = 271$, $r = - 0.03$, $p \leq .33$) in the MBSS group. There was no significant main effect of gender on either the total monitoring [$F (1, 269) = .60$, $p \leq .44$] or the total blunting [$F (1, 269) = .37$, $p \leq .54$].

Conclusions and Directions Based on Substudy I

Based on total monitoring and total blunting, four categories of cognitive informational styles were identified within the MBSS Group. This points out a flaw in Miller's monitoring and blunting hypothesis. Using Miller's approach, it would be worthwhile to explore how members of the four categories of cognitive informational styles may differ in their actual application of strategies in the four situations of the MBSS and other threatening situations.

The results of an item analysis using data from the MBSS group indicate several items, both monitoring and blunting, that are problematic. It may be worthwhile in future research to develop and test new items to replace the problematic items. Replacing problematic items may clarify interpretations of the MBSS scores.

The alpha coefficients for the monitoring and blunting subscales across and within situations were low. All correlations among the items were generally weak. This is likely due to the variation in the marginal values for the items. The results of correlations among situations as well as the results of exploratory factor analysis provide modest support for a structure combining coping strategies with situations. An evaluation of situation by strategy correlations indicate that the impact of the situation may be more salient than trait on coping behavior. Stronger correlations among the items for the dentist and the layoff situations compared to the hostage and airplane situations suggest that these situations may be more relevant to the population represented by the sample. Overall, the structure of the MBSS is weak. Future research directed at the construction, evaluation, and testing of more relevant items and situations for the MBSS may increase the strength of the structure of the MBSS.

Of the 271 students in the MBSS Group, 121 students consented to follow up interviews to further test aspects of the construct validity of the MBSS. The next three chapters describe the development and testing of tools and procedures in preparation for further evaluation of the representativeness of the situations and items (strategies) in the MBSS using a select subsample of students who consented to follow up interviews.

CHAPTER V

SUBSTUDY II

Purpose of Substudy II

Substudy II was an initial step in the construction of a set of imaginable, threatening situations which have a broader range of controllability than the situations included in the MBSS. The newly constructed situations were to be administered later to a select subsample of the MBSS group to investigate aspects of the external validity of the MBSS. In Substudy II a group of 6 students generated a pool of 17 threatening situations. In Substudy III, described in Chapter VI, the pool of threatening situations was tested using a group of 70 students.

Method

Sample

A sample of 6 students volunteered to participate in Substudy II. For clarity, this sample of students will be referred to as the Task Development Group (TDG). Similar to the MBSS Group, the TDG consisted of undergraduate students attending summer classes at the University of Alberta. Unlike the MBSS Group, the TDG was not administered the

MBSS. The purpose of this sample was to generate a pool of hypothetical, threatening situations relevant to the TDG. The size of the TDG was based on practical considerations including: time limitations, comfort in discussing and describing potentially threatening situations, and ease of coming to a consensus on the descriptions of threatening situations.

The 6 students were obtained through a variety of procedures. The purpose of Substudy II was explained to a representative for the undergraduate education students association. The student representative then contacted fellow students, explained the substudy and asked those interested in participating in Substudy II to contact the researcher by telephone. One volunteer was obtained through that method. Of the 5 remaining volunteers, 2 volunteers were known by the researcher and were directly contacted by the researcher and 3 volunteers were obtained through the use of classroom time as previously described.

Procedures

The 6 members of the TDG were asked to take an instructional package which included instructions, an abstract, and a consent and a General Information Form (Appendix C). Students were advised that participation in Substudy II would require a commitment of approximately 5 hours of their time. It was anticipated that it would take about 2 hours for each member to independently construct at least 4 threatening situations. Following the independent activity, the members of the TDG were to meet with the researcher at a mutually negotiated time. The purpose of the group meeting was to discuss the threat situations in relation to the goal of the study and to refine the descriptions of the threatening situations. It was anticipated that it would take about three hours to come to a consensus about the descriptions of the new situations.

Included in the Task Development Instructional Package were instructions for constructing at least four threatening situations. The request that each student develop 4 threat situations seemed reasonable based on the time allotted for the independent development of threat situations (ie., 2 hours). According to Miller (1988b) the intensity of the situation, determined by the imminence, probability, and duration of the threat situation as well as the controllability and predictability of the situation are important characteristics of the situation that influence coping behavior. It was expected that generating a pool of threatening situations through independent and group activity would result in a pool of situations likely to range in intensity of threat. However, to assure a range in controllability and predictability, instructions were included to direct the students to vary these characteristics. Miller's definitions of control and of predictability were used as a guide for the construction of the instructions. The instructions given to students for the development of the situations are presented in Table 20.

Students were given 10 days to independently construct descriptions of 4 different threatening situations and were contacted by the researcher by telephone to arrange a group meeting. Due to difficulties with scheduling, only three students were able to attend a group meeting. Data submitted by all students in the TDG were discussed in a 2.5 hour meeting. During the meeting the purpose of the meeting was reiterated, and descriptions of newly developed threat situations were distributed and discussed.

Table 20

Instructions for the Construction of Threat Situations

"Try to imagine at least four or more threatening situations that you might encounter. Each of these threatening situations could result in physical and/or psychological harm (embarrassment, anxiety, loss, etc.) to you. The four or more situations should include at least one of each of the following:

i) a situation which you can know something about in addition to the fact that it will occur. A situation in which you can do little to avoid or reduce the potential harm to you;

ii) a situation which you can know nothing about except that it will occur and that you will be able to do little to avoid or reduce the potential harm to you;

iii) a situation which you can know or learn something about in addition to the fact that it will occur. A situation in which you can do something to limit the potential harm to you.

iv) a situation which you can know nothing about except that it will occur. A situation in which you will be able to do something to reduce the potential harm to you."

Results

Sample

Six students, 4 female and 2 male, submitted descriptions of threatening situations. The ages of the volunteers ranged from 21 to 48 years. All students had lived in Alberta at least 1 year. There were 5 students from the faculty of education and one from the faculty of nursing in the TDG. Due to scheduling difficulties, only 3 of the students were able to meet with the researcher to discuss and refine the situations.

Newly Constructed Threat Situations

Twenty-eight newly constructed threatening situations were submitted. Several of these were similar in nature. For example, two students described threat related to illness of a friend or loved one and two other students described threat related to university assignments. Where possible, ideas were combined and descriptions of the situations were refined. Other threat situations were gender specific. For example, two students described threat related to sexual assault; although relevant particularly to women, this situation was not included.

Based on the discussion generated during the TDG meeting, a pool of 17 new threatening situations was developed. These are described in Table 21.

The pool of 17 new threatening situations was evaluated in Substudy III.

Table 21

Pool of Threatening Situations

Theme	Description of Situation
Elevator	Vividly imagine that you are in an elevator with three other people when the elevator jolts to a stop between two floors. After 2 to 3 minutes the elevator suddenly drops about 4 feet and stops again.
Travel delay	Vividly imagine that you are on an airplane which has been unexpectedly delayed. You fear that you will miss a connection. This will mean that you may lose an opportunity to visit a loved one whom you are anxious to see.
Disease	Vividly imagine that you have been in contact with a fatal disease and are awaiting the results of a test to determine if you have contracted the disease.
Post-Exam	Vividly imagine that you have just written an exam which you thought was difficult. It is important to you in terms of your future plans that you receive a good grade on this exam. Marks will be posted tomorrow.
Talk	Vividly imagine that you are to give a 20 minute talk to 25 people who are experts on the topic you will be addressing. You feel anxious about your presentation.
Social	Vividly imagine that you have to attend a social function this evening. You do not know many of the people who will be attending this event. You fear that when you arrive you will not see anyone you know and as a result you will feel awkward and embarrassed.
Interview	Vividly imagine that you have an important job interview scheduled for tomorrow morning. The interview will be conducted by a panel of eight people. It is very important to you that the interview goes well for you.
Expense	Vividly imagine that you have an unexpected expense this month. You are afraid that you will not be able to pay all of your bills.

Table continues

Table 21 (Continued)

Pool of Threatening Situations

Theme	Description of Situation
HIV+	Vividly imagine that you have recently donated blood at the Red Cross Blood Bank. A public health nurse from the bank has just notified you that your screening test for the aids virus is positive (you are carrying the virus).
Knives	Vividly imagine that you and your friend are walking down a street at 11 pm when 3 youths with knives surround you.
Break In	Vividly imagine that it is 10 pm and you are at home alone when you hear a window break in the next room.
Air Crash	Vividly imagine that there has been an airplane crash. A loved one was on that flight. Although you know that some have survived, it will be 2 hours before you will receive official information regarding the survivors. You have been asked to await further word at home.
Assignments	Vividly imagine that you have 4 important assignments to complete by the end of next week. It is very important to you that you do well in these assignments but you fear that you do not have enough time to deal with them.
Cancer	Vividly imagine that a loved one is fatally ill with cancer. It is not likely that this loved on will live longer than 2 months.
Plagiarism	Vividly imagine that you have been asked to meet with the dean and one of your professors regarding a charge of plagiarism associated with a recent paper.Although you believe you are innocent the charge has frightened you. The meeting has been scheduled for the end of the week.
Stranded	Vividly imagine that you and a friend are stranded in a car in the country late at night. Earlier you had honked your horn at a car which had past you under dangerous conditions. That same car has just passed you again and has stopped a few yards in front of you. Four men who appear to be drunk and hostile get out of their car.
Pre-exam	Vividly imagine that you have an exam tomorrow morning that you do not feel prepared for. It is essential to you that you maintain a good grade point average in order to meet your career goals. You feel anxious about the exam.

CHAPTER VI

SUBSTUDY III

Purpose of Substudy III

The purpose of Substudy III was to evaluate the pool of 17 threat situations developed in Substudy II and the 4 threat situations included in the MBSS on a sample of students. Data from this substudy were used to determine how students perceived the new situations and Miller's threat situations. Based on the students' perceptions of the situations, the best 8 threat situations in the pool of 17 were selected. These, together with the 4 situations from the MBSS, were then administered to a subsample of the MBSS group to investigate the external validity of the MBSS.

Method

Sample

A sample size of at least 30 students in education was sought for Substudy III. For clarity, this group of volunteers will be referred to as the Task Evaluation Group (TEG). The sample size was based on consideration of the purpose of Substudy III, time available to the researcher, and the estimated response rate. Based on an anticipated response rate between 10% to 30%, it was calculated that approximately 350 students would need to be approached in order to obtain the desired sample size. The sample was obtained during the fall of 1991 and classroom time was used to recruit students. Classes were selected from courses offered by the Faculty of Education based on the researcher's schedule, the class schedules, and student enrolment.

Measures

To determine the students perceptions of the newly generated situations and the MBSS situations, the Task Evaluation Questionnaire (TEQ) was developed. Following Miller (1988b) and Van Zuuren and Wolfs (1991), the TEQ included four 5-point scales to evaluate the perceived imaginability, intensity of threat, controllability, and predictability of the threat situations (1= not at all, 2 = somewhat low, 3= neither high or low, 4= somewhat high and 5= very high) . The use of these situational characteristics allowed comparisons with previous research and facilitated the selection of the eight best threat situations. Two open ended questions were also included. The first question asked respondents to give reasons for the score they had assigned to the intensity of threat of each situation and the second question sought general impressions of the hypothetical situations. Responses to the open ended questions were used to point out flaws in the descriptions of the situations. Also, the open ended questions were used to determine the relevance and representativeness of the situations in terms of threat in this sample of students. A copy of the TEQ is provided in Appendix D.

Volunteers in Substudy III were also given a General Information Form to determine the demographic characteristics of this sample (see Chapter IV; Appendix B).

Procedures

Professors teaching the selected classes were contacted by telephone by the researcher to obtain permission to use 10 minutes of classroom time to recruit volunteers to participate in Substudy III. All of the professors contacted agreed to allow the researcher to use 10 minutes of their class time to briefly explain the purpose of Substudy III, to explain the volunteer's role in Substudy III, and to distribute a Task Evaluation Package to those students interested in participating in Substudy III. The Task Evaluation Package included an abstract of the study, a consent form, a General Information Form, and the Task Evaluation Questionnaire. Students who wished to participate in Substudy III were asked to read the instructions carefully, to sign the consent form, and complete the Task Evaluation Questionnaire and the General Information Form in their spare time prior to the next scheduled meeting of the class. Completed material was collected by the researcher just prior to or at the end of the next scheduled meeting of the class. Students who required additional time were asked to return their completed materials to the researcher within 10 days either through the use of the campus mailing service or by personally delivering the materials to a specified mailbox on campus.

Data Preparation and Analysis

Data obtained from the Task Evaluation Questionnaire and the General Information Form were coded and entered into a computer file with 100% verification. The SPSSX Information Analysis System (SPSS Inc., 1986) was used to analyze the data.

Selection Criteria

Selection criteria for the 8 new threat situations were: high imaginability means, low standard deviations, a range in the nature of the threat subject, and a range in threat intensity, predictability, and controllability.

Results

Sample

Eleven class visits were conducted by the researcher in the fall term of 1991. The departments represented by the classrooms visited are described in Table 22. Of the 11 classrooms visited, 4 were in courses offered through the Department of Educational Psychology and 7 were in courses offered through the Department of Elementary Education.

Table 22

Fall Classes

Faculty	Department	Number of Classes	n
Education	Educational Psychology	4	150
	Elementary Education	7	205

Classroom visits yielded a total of 355 eligible students of whom 70 (19.7%) completed the Task Evaluation Package. The demographic description of the TEG sample is presented in Table 23. Of the 69 students who reported their gender, 58 were females and 11 were males. Based on data from 69 students who reported their age, the mean age was 25.3 years with a range from 19 to 48 years. Of the 69 students who reported their length of residency in Alberta, the mean number of years lived in Alberta was 20.8 years with a range from 1 to 47 years. The distribution of students across faculty was: education (n = 66), arts (n = 1), and physical education and recreation (n = 2).

Table 23

Demographic Characteristics of the Sample in Substudy III
(n = 70)

	Number	Percent
Gender (n = 69)		
Female	58	84.1
Male	11	15.9
Age (n = 69)		
Mean age in Years	25.3	
Range in Years	19-48	
Years in Alberta (n = 68)		
Mean	20.8	
Range	1-47	
Faculty (n = 69)		
Education	66	95.6
Arts	1	1.4
Physical Ed	2	2.9

The Evaluation of the New Situations

The results of the analysis of data generated by the TEG provided a means of extracting the 8 best situations from the pool of hypothetical, threatening situations that were developed in Substudy II. The perceived characteristics of the new situations and Miller's situations are shown in Table 24. Employing the selection criteria described on page 162, the 8 situations selected were: elevator, disease, travel delay, post-exam, interview, expense, talk, and social.

Table 24 was organized to make obvious the important difference between the characteristics of the 8 newly selected situations and the MBSS situations.

Table 24

Situational Characteristics (n = 70)

Theme	Threat		Imaginable		Control		Predictable	
	M	SD	M	SD	M	SD	M	SD
New Situations Selected								
Elevator	4.0	0.9	3.9	0.9	1.8	1.1	2.1	1.2
Disease	4.5	0.7	3.3	1.2	1.8	0.9	2.3	1.2
Travel delay	2.9	1.1	3.8	1.0	1.8	1.2	2.7	1.2
Post-exam	3.2	1.2	4.6	0.5	3.2	1.4	3.4	1.2
Interview	3.6	1.0	4.4	0.7	3.6	1.0	3.4	1.1
Expense	2.9	1.2	3.9	1.2	3.7	1.2	3.5	1.1
Talk	3.8	1.0	4.0	1.0	3.9	1.0	3.4	1.0
Social	2.7	1.1	3.8	1.2	4.1	1.1	3.7	1.0
New Situations Not Selected								
HIV +	4.5	1.0	2.4	1.2	2.6	1.5	2.7	1.4
Knives	4.5	0.8	3.1	1.2	2.8	1.2	2.5	1.2
Break in	4.1	0.9	3.8	1.0	2.6	1.2	2.4	1.0
Air crash	4.4	0.9	3.6	1.1	1.6	0.9	2.0	1.2
Assignment	3.5	1.1	4.6	0.6	4.0	1.0	3.9	0.9
Cancer	4.3	1.0	3.9	1.0	1.7	0.9	2.8	1.3
Plagiarism	3.8	1.2	2.5	1.2	3.0	1.2	2.6	1.2
Stranded	4.5	0.9	3.2	1.1	2.5	1.2	2.6	1.3
Pre-exam	3.8	1.0	4.2	0.9	3.6	1.2	3.5	1.0
Miller's Situations								
Hostage	4.4	0.9	2.1	1.1	1.6	0.8	1.8	1.1
Airplane	3.8	0.9	3.5	1.1	1.6	0.9	2.2	1.2
Layoff	3.2	1.2	3.2	1.2	2.8	1.2	2.9	1.0
Dentist	3.6	1.1	3.2	1.5	2.9	1.2	3.4	1.0

Note. Ratings were on a 5-point scale, (1= not at all, 2 = somewhat low, 3= neither high or low, 4= somewhat high and 5= very high)

The magnitude means and the ranges of scores for each of the situational characteristics were calculated for the new situations and compared with those of the MBSS situations. The mean score for threat in the new situations was 3.45 with a range from 2.7 to 4.5. This was similar to the mean score for threat in the MBSS situations which was 3.8 with a range from 3.2 to 4.4. The mean score for imaginability in the new situations was 4.0 with a range from 3.3 to 4.6. These were higher by comparison to the mean score for imaginability in the MBSS situations which was 3.0 and ranged from 2.1 to 3.5. The mean score for controllability in the new situations was 3.0 with a range from 1.8 to 4.1. By contrast the mean score for controllability in the MBSS situations was lower, 2.2, and the range of scores was narrower, 1.6 to 2.9. The mean score for predictability in the new situations was 3.1 with a range from 2.1 to 3.7. These scores were similar to the mean score and range for predictability in the MBSS situations which was 2.6 and 1.8 to 3.4 respectively. Overall, compared to the situational characteristics of the MBSS, the 8 new threat situations selected represent more highly imaginable situations which have a similar range in threat intensity and predictability but a greater range in controllability.

Evaluation of Miller's Situations

The scores on the characteristics of the MBSS situations using a 5-point rating scale (Table 24) (0 = not at all, 5 = very) are similar to those reported by Van Zuuren and Wolfs (1991) using a 4-point rating scale (Table 2: 1 = not at all, 4 = very). The data from both studies indicate that the hostage situation, compared to the other situations in the MBSS, is the least imaginable. These data provides partial support for conclusions based on situation by strategy correlations obtained in Substudy I which demonstrated lower coefficients among the monitoring and blunting strategies in the hostage and airplane situations compared to the dentist and layoff situations. It may be that the hostage situation in particular is not relevant to the sample studied. Further study, using the interview technique to explore general reactions to the MBSS situations might provide more direct information related to the relevance of the MBSS situations. Overall, based on the students' mean ratings, the MBSS situations appear to be moderately threatening (3.8), imaginable (3.0) and predictable (2.7) situations of relatively low control (2.2).

Direction Based on Substudy III

The 8 new threat situations were developed to serve as a "task" to test the representativeness of the situations and items in the MBSS in a final substudy of the research project. To test this aspect of the external validity of the MBSS, members of a subsample of the MBSS group were interviewed to determine how they would cope with each of the 8 new threat situations and the 4 MBSS situations. Prior to conducting the final substudy, a pilot study was undertaken to refine an interview schedule and to test the research protocol. The pilot substudy is described in Chapter VII.

CHAPTER VII

SUBSTUDY IV

Purpose of Substudy IV

The purpose of Substudy IV was to develop, refine and test a semi-structured interview schedule designed to encourage students to describe coping strategies used in threatening situations. In addition, Substudy IV was designed to test the task and evaluate the research protocol for Substudy V, in which the external validity of the MBSS was examined.

Method

Sample

A random sample of 11 students was selected from the 121 students of the MBSS Group who consented to participate in follow up interviews. This sample will be referred to as the Pilot Group (PG). A small sample was considered appropriate considering the purpose of Substudy IV. Using the mean monitoring and blunting scores as cut-off scores, each of the 121 students from the MBSS group was assigned to one of 4 categories of cognitive informational styles: high monitoring/high blunting (HM/HB), low monitoring/low blunting (LM/LB), high monitoring/low blunting (HM/LB), and low monitoring/high blunting (LM/HB). Students were then randomly selected from each of the 4 cognitive informational style categories for inclusion in Substudy IV.

Measures

The purpose of the interviews was to have students verbally describe how they would cope with the eight new threatening situations which were generated and tested in substudies II and III respectively and with the four situations in the MBSS. A semi-structured interview guide was developed for this purpose (Table 25). The semi-structured interview schedule included i) a sorting exercise designed to assess the intensity of threat of each situation, ii) three rating scales, iii) open ended questions designed to qualitatively capture the students' perceptions of a number of characteristics of the situation: threat intensity, imaginability, predictability, and controllability, and iv) an open ended question in which the students were asked how they would cope in each situation. Finally, it was speculated that restricting the examinee to a limited range of monitoring and blunting strategies in the MBSS might bias the interpretation of the MBSS. To evaluate this possibility, students were asked to respond to the rating scales and the two sets of open ended questions for each of the four situations included in the Miller Behavioral Style Scale.

Table 25

Semi-Structured Interview Guide

---

1) Sorting exercise:

Review the threatening situations described on each of the 8 cards. Arrange the cards in an order which represents how threatening you feel they are to you. Stack the cards from least threatening to most threatening.

Why did you arrange the cards in that order? Explain.

2) Discuss each of the situations individually.

How would you feel in this situation?
What would you be thinking in this situation?
What would you do to cope in this situation?

3) After each situation is discussed ask the student to scale a number of the characteristics of the situation.

How easy is it to imagine you are in this situation? (1,2,3,4,5)
(1=cannot, 5= very easy) Explain.

How predictable is this situation? (1,2,3,4,5). Predictability means that you can know something about the situation whether or not you can do anything about the situation. Explain.

If you were actually in this situation, how much control would you have of the situation? (1,2,3,4,5) Explain.

4) Present the volunteer with each of Miller's four situations (one at a time, in random order) and repeat steps 2 & 3.

Based on Miller's theory, the strategies included in the MBSS, and criteria developed by Van Zuuren and Wolfs (1991), several criteria were drawn up to facilitate the identification of monitoring and blunting strategies used by the students when responding to the open-ended questions included in the semi-structured interviews. These criteria are presented in Table 26.

Table 26

Criteria for Identifying Coping Strategies

Monitoring	
	seeks information from the environment about the threatening situation (books, cues in the situation, people's actions, sounds, smells)
	seeks information relevant to prepare or plan for the impact (e.g., make sure you know where the exits are located)
	asks others for information about the threatening situation (e.g., seek experts or friends who have been in the situation)
	seeks information within own past experience (recall similar situations, reconstruct the situation...think of what had done that might impact on present situation)
Blunting	
	direct attention to other things (for e.g., movie, TV, mental puzzles, daydream)
	trying to forget the situation, put the threat out of my mind, avoid talking about the threat or carry on as if nothing special was happening
	think about how nice it will be for the situation to be over
	suppress cognition (e.g., take a drink or tranquillizer)
	abandon cognition (e.g., sleep)

Procedures

Students were contacted by phone to arrange a suitable time for the interview. All interviews were conducted in an office on the university campus. Before beginning the interview the researcher explained the purpose of the interview and how the interview would proceed. The student was informed that in addition to tape recording the interview, the researcher would also take notes throughout the interview to record strategies for the purpose of verifying and clarifying meaning. The eight cards containing threat situations were then given to the student to read. The student was asked to sort the cards in an order reflecting how he or she would rank the situations in terms of intensity of threat. Once the sorting was completed, the tape recorder was turned on and the student was asked to discuss how he or she determined the ranking of the situations.

A typical interview proceeded as follows: i) the researcher read the description of the threat situation out loud; ii) the student was asked to try to vividly imagine that he or she was actually in the situation; iii) the student was asked to describe feelings and thoughts elicited by the situation and coping strategies that he or she might use in the situation; iv) the researcher summarized the coping strategies that the student had mentioned, seeking clarification and verification; v) the student was asked if there was anything else that he or she would do to cope; and vi) when the student could think of no further strategies, the student was asked to scale the situation in terms of imaginability, predictability and controllability (1 = not at all, 5 = very imaginable, predictable or controllable). Alternately, by student, the interview began with either the most threatening or the least threatening of the eight situations in the task. The four situations in the MBSS were then discussed in random order.

Data Analysis

Substudy IV was essentially a pilot study to develop, refine, and test tools and procedures in preparation for Substudy V. Given the purpose of Substudy V, no attempt was made to compare the data generated in the MBSS with interview data. Due to constraints, only three of the 11 tape recorded interviews were formally transcribed. The criteria for identifying the monitoring and blunting strategies (see Table 26) were applied to these three transcripts by two independent markers. A dichotomous scoring system was used to score the students on monitoring and blunting for each of the situations discussed. That is, if at least one blunting strategy was identified in the transcript pertaining to a situation, then the person was given a blunting score of 1 for that situation. Similarly, if a monitoring strategy was identified in the transcript, the person was given a score of 1 for monitoring. Thus for any threat situation, it was possible to obtain scores of (0,0), (0,1), (1,0) or (1,1) for (blunting, monitoring).

The tape recordings of the remaining eight interviews were reviewed and notes were made of the rationale for the card sort, the perceptions of the situational characteristics, and the strategies mentioned during the discussion of the threatening situations. Review of this information together with the information obtained from the independent scoring of the three transcripts was used to identify problems and guide revisions related to the study protocol.

Results

Sample

Since the sample of 11 PG students was taken from the fourfold categorization of the 121 who agreed to be interviewed, it was first necessary to categorize the 121 students according to their blunting and monitoring behavior determined with the MBSS. The mean and median of the total monitoring and blunting scores across situations for the group of 121 students are provided in Table 27. Using the mean monitoring score of 9.79 as a cut-off score, all students who obtained a monitoring score equal to or above 10 were classified as high monitors while the remainder were classified as low monitors. Similarly, using the mean blunting score of 3.64 as a cut-off, those students with a blunting score equal to or above 4 were classified as high blunters while the remainder were classified as low blunters. The result of the application of this method of categorizing students is summarized in Table 27. Of the 121 students, 43 (35.5%) students were categorized as high monitors/ low blunters (HM/LB), 31 (25.6%) students as low monitors/high blunters (LM/HB), 26 (21.4%) students as high monitors/high blunters (HM/HB), and 21 (17.4%) students as low monitors/low blunters (LM/LB).

Table 27

Cognitive Informational Style Categories of Volunteers for Follow up Interviews (n = 121)

	n	%	Monitoring Subscale Mean	SD	Median	Blunting Subscale Mean	SD	Median
	121	100.0	9.79	3.0	10.0	3.64	2.3	3.0
Category								
HM/LB	43	35.5	11.91	1.5	12.0	1.74	1.0	2.0
LM/HB	31	25.6	6.77	2.0	7.0	5.58	1.9	5.0
HM/HB	26	21.5	11.92	1.7	12.0	5.58	1.8	5.0
LM/LB	21	17.4	7.28	1.7	8.0	2.23	0.9	3.0

Note. HM/LB monitoring score $\geq$ 10, blunting score < 4
LM/HB monitoring score < 10, blunting score $\geq$ 4
HM/HB monitoring score $\geq$ 10, blunting score $\geq$ 4
LM/LB monitoring score < 10, blunting score < 4

Table 28 provides a description of some of the characteristics of the sample used in Substudy IV. Students were randomly selected from each of the four cognitive informational style categories. Each of the cognitive informational style categories was represented by three students with the exception of the LM/LB cognitive informational style category which was represented by two students. The PG included 8 females and 3 males. The mean age in the PG was 31.7 years with a range from 19 to 45 years. The mean years of residency in Alberta was 21.6 years with a range from 2 to 38 years. The distribution of students across faculty was: education (n = 4), arts (n = 2), nursing (n = 2), business (n = 1), St. Jean (n = 1), and unknown (n = 1).

Table 28

Characteristics of the Sample in Substudy IV

Coping Category	Age	Gender	Faculty	Years in Alberta	MBSS Score Monitor	MBSS Score Blunt
HM/LB	43	F	Education	38	13	1
	25	F	Arts	21	13	2
	20	F	Arts	20	12	2
LM/LB	27	F	unknown	24	9	3
	43	M	Education	43	9	3
	19	F	St. Jean	19	9	3
HM/HB	40	F	Education	23	10	4
	31	F	Nursing	12	10	4
	31	M	Business	22	15	4
LM/HB	45	F	Education	2	6	4
	25	M	Nursing	14	6	4

Note.

HM/LB	monitoring score $\geq$ 10, blunting score < 4
LM/HB	monitoring score < 10, blunting score $\geq$ 4
HM/HB	monitoring score $\geq$ 10, blunting score $\geq$ 4
LM/LB	monitoring score < 10, blunting score < 4

Procedural Problems Identified and Resulting Revisions

The mean length of time required to complete the interviews in the pilot study was 90 minutes. It was felt that the interviews should be limited to 60 minutes to reduce the possibility of fatigue and loss of interest in the task. Therefore, three major revisions were made to the procedures to reduce the length of the interviews. These revisions are described below.

It was noted that the process of card sorting followed by discussion of each of the situations resulted in repetition of information (refer to steps 1 and 2, Table 25). Thus, the card sorting exercise was eliminated. Given the purpose of the interviews was to have the students discuss how they would cope with the situations from the task and the MBSS, measures to determine the student's perceptions of the situations were reduced (refer to step 3, Table 25). Since it is imperative for the student to be able to imagine the situation in order to describe coping strategies that would be applied, it seemed appropriate to continue to seek the student's perception of the imaginability of each of the situations. Other characteristics of the threat situations would be assumed to be similar to those of the findings in Substudy III (Table 24). The number of threat situations to be discussed was reduced from 12 to 9. The eight new threat situations would be discussed plus one randomly selected from Miller's four situations. The selection of the Miller situation to be discussed was made prior to each interview so that across the interviews each situation would be discussed about an equal number of times. Based on findings from Substudy IV, a revised set of guidelines for the semi-structured interviews was developed in preparation for Substudy V . The revised guidelines are presented in Table 29.

Table 29

Revised Semi-structured Interview Guide

---

1. Briefly explain the purpose of the interview and how the interview will proceed

2. The student is presented with eight cards (5 x 3 inches) one for each of the eight threat situations included in the task. Ask the student to read the eight situations and select a situation to begin the interview.

3. The researcher will read the threatening situation out loud.

4. The researcher will ask the student to imagine that he or she is actually experiencing the situation.

5. Ask the student how he or she would cope with the situation (or what he or she would do to deal with the situation).

6. The researcher will make notes of the strategies mentioned during the discussion of each situation. When the student appears to have exhausted all his or her thoughts about what he or she might do in the situation, the researcher will summarize the strategies that the student has mentioned and ask for clarification on any points.

7. The researcher will ask if the student can think of anything else that he or she might do to cope with the situation.

8. If the student cannot think of anything else, the researcher will ask the student to scale the extent to which he or she thinks the situation is imaginable.

   > I would like you to give me an idea of how easy it is for you to imagine that you are in this situation using a scale from 1 to 10. If 1 means it is not at all imaginable, and 10 means that it is very easy to imagine, how easy is it for you to imagine that you are actually in this situation?

9. Repeat steps 3 through 8 until each of the eight situations in the task and one of the four situations from the MBSS have been discussed.

Identifying Coping Strategies in the Transcripts

Monitoring and blunting elements were clearly identifiable in the transcripts. Following an initial training session, inter-rater reliability between 2 expert markers was .81 based on interpretation of three transcripts.

Directions Based on Substudy IV

Given revisions resulting from Substudy IV, the necessary procedures and tools were in place for proceeding with Substudy V in which the external validity of the MBSS was investigated.

CHAPTER VIII

SUBSTUDY V

Purpose of Substudy V

The purpose of Substudy V was to investigate the representativeness of the situations and the items in the MBSS using a "select" subsample of the MBSS group who had consented to follow up interviews. Members of the select subsample were asked to describe how they would cope with the eight new threat situations, referred to as the "task" which was developed and tested in Substudies II and III. Members of the select sample were also asked to describe coping strategies that they would use in one of the threat situations from the MBSS.

Method

Sample

Of the 110 remaining members of the MBSS group who had consented to follow up interviews (excluding 11 members of the MBSS group who took part in Substudy IV), 60 students were selected to participate in Substudy V. Students with the most extreme scores in both monitoring and blunting were selected from each of the four categories of cognitive informational styles based on the MBSS results (i.e., high monitoring/high blunting, high monitoring/low blunting, low monitoring/low blunting, and low monitoring/high blunting) (see Table 27). It was intended that the 60 students would be comprised of four groups of 15 students, representing each of the four cognitive informational style categories. This would allow for adequate exploration of potential differences in coping between these categories. For the purpose of clarity this sample will be referred to as the distinct group (DG). Complete data were not available for 16 students. The final sample consisted of 44 students.

Measures

The revised semi-structured interview schedule developed in Substudy IV was used in Substudy V. The purpose of the interview schedule was to have students verbally describe how they would cope with the eight new threatening situations, referred to as the task, and one situation randomly selected from the four MBSS situations. For more detail the reader is referred to Chapter VII, Table 29, for a description of the content of the semi-structured interview schedule, Chapter V for a description of the situations in the task, and Chapter II for a description of the situations in the MBSS.

Procedures

On average, each week, 2 students were selected from each of the 4 cognitive informational style categories and were contacted by telephone to arrange appointments for interviews during the following week. The order in which interviews were conducted was dictated by the student's and the researcher's schedules. To limit the possibility of the interviewer recalling the student's cognitive informational style at the time of the interview, appointments for interviews were made 1 week in advance and only the time of the appointment and the student's name were entered in the weekly appointment book.

Before beginning the interview the researcher explained the purpose of the interview and how the interview would proceed as follows:

> I'm interested in studying how people cope in threatening situations. I had you fill out a questionnaire in the summer of 1991. In that questionnaire you were presented with four different threatening situations and were asked to check items which reflected the way you might cope if you were in those situations. Now I would like to present you with another eight new threatening situations along with one of those situations that was included in that questionnaire that you completed last summer. The new

situations were developed by other students attending university. This time I would like to have you tell me what you would do to cope if you were actually in these situations. As I indicated previously, I will tape record this interview. Throughout the interview I may ask you to help me clarify that I understand your meaning. There is no correct or wrong way to handle these situations. Whatever you can tell me about how you cope would be most helpful. I expect that the interview will take about 60 minutes. Some may take less time, others may take slightly more time. Half way through the interview I will ask you if you would like to take a five minute break before we continue with the discussion of the remainder of the situations. I have placed a description of each of the eight new threat situations on eight separate cards. I will have you read the cards and pick a situation that you would like to discuss first. When you are ready to begin I will turn on the tape recorder. I will then read the description of the situation with you and ask you to try to imagine that you are actually in that situation. Then I will ask you to tell me what you would do to cope with that situation.

After each situation was discussed the student was asked to indicate how easy it was to imagine being in the situation using a scale of 1 to 10 (1 = cannot imagine, 10 = very easy to imagine).

Due to unforseen delay in the process of developing and testing the task, interviews of the DG did not begin until approximately six months after the initial administration of the MBSS. In order to detect changes in monitoring and blunting strategies that may have occurred, students were asked to retake the MBSS. To limit possible influences of taking the MBSS on responses to the interview, the retesting was scheduled one week after the interview. Forty-four students of the DG completed the MBSS retest.

Data Preparation and Analysis

All tape recordings and transcripts of the interviews were number coded. Using the criteria for identifying monitoring and blunting strategies employed in Substudy IV (see Table 26), transcripts were interpreted without the researcher's knowledge of the students' cognitive informational style categories. A dichotomous scoring system (i.e., 1,0) was used for recording monitoring and blunting identified in the transcripts for each of the 9 situations. When summed over situations, total scores in the interview task could vary from 0 to 8 on monitoring and from 0 to 8 on blunting. Responses to the randomly assigned situations from the MBSS were not included as part of the total score in the interview task.

A stratified random sample of 20% of the transcripts from the DG was independently marked by a second expert to assess the reliability of the transcript interpretations. Of the 44 transcripts, nine were selected from each situation in the task (8) to check reliability of monitoring scores and another nine were randomly selected from each situation in the task (8) to check reliability of blunting scores. Since students were randomly assigned to only one of the situations from the MBSS, a sample of 9 transcripts representing the distribution of MBSS situations assigned were drawn from the MBSS interview data to check inter-rater reliability of monitoring scores. A second set of 9 transcripts were drawn in the same way to check the inter-rater reliability of blunting scores.

Data obtained from the transcript analysis were entered into a computer file with 100% verification. The SPSSX Information Analysis System (SPSS Inc., 1986) was used to analyze the data.

Correlation procedures were used to determine the test-retest reliability coefficients for both the monitoring and blunting subscales of the MBSS. Correlation procedures were also used to examine the relationship between the results of the MBSS with the results of interviews. Analysis of variance procedures were used to examine the effect of cognitive informational style on monitoring and blunting in the interviews. Content analysis of the interview data was used to determine the strategies used in the MBSS situations. This provided a means of evaluating the representativeness of the strategies described in the MBSS items.

Results

Sample

The initial DG sample included 60 students. However, 16 failed to take the MBSS. Thus complete data were available for 44 students. As will be described in the next section, the test-retest reliability scores at the six month interval were low. Consequently, it was felt, given this instability, only the data from the 44 students who completed the MBSS retest should be used for investigating the representativeness of the situations and items in the MBSS. Presented here is a demographic description of the sample of 44 students.

The demographic characteristics of each member of the DG group and his or her cognitive informational style are listed in Table 30. A summary of the demographic characteristics of the DG is presented in Table 31.

Table 30

Demographic Characteristics of Each Member of the Distinct Group (n=44)

Category	Age	Gender	Faculty	Years in Alberta	MBSS Score	
					Monitor	Blunt
HM/LB	30	F	Arts	30	11	3
	49	F	Nursing	40	14	1
	29	F	Education	12	14	1
	19	F	Science	11	12	0
	21	F	Business	21	12	2
	45	M	Education	45	15	1
	28	F	Unclassified	28	13	3
	35	F	Science	30	11	0
	18	F	Missing	18	14	3
	36	M	Graduate S	1	15	2
LM/LB	20	F	Education	18	8	2
	41	F	Nursing	15	9	3
	40	F	Arts	28	8	0
	48	F	Nursing	20	8	2
	20	F	Science	20	9	1
	29	F	Unclassified	3	8	2
	34	F	Arts	6	9	3
	22	F	Rehab	2	7	3
	46	M	Education	18	5	3
	37	F	Arts	36	5	3

Table continues

Table 30 (continued)

Demographic Characteristics of Each Member of the Distinct Group (n = 44)

Category	Age	Gender	Faculty	Years in Alberta	MBSS Score	
					Monitor	Blunt
HM/HB	24	F	Education	24	15	5
	43	F	Education	43	12	10
	33	F	Education	30	11	6
	22	F	Education	15	11	8
	24	F	Education	22	14	4
	24	F	Education	22	15	5
	35	M	Education	15	10	5
	36	M	Native S	13	10	6
	20	F	Business	18	13	4
	37	F	Nursing	15	11	4
	23	M	Science	23	10	8
	23	M	Physical Ed	23	13	7
LM/HB	36	M	Education	18	7	6
	40	F	Education	9	4	6
	19	M	Business	18	4	5
	28	F	Arts	28	6	5
	46	F	Arts	45	7	4
	36	F	Education	32	8	5
	20	F	Nursing	20	9	5
	26	F	Science	26	6	5
	28	M	Education	13	9	6
	39	F	Education	16	7	4
	28	F	Arts	10	6	6
	28	F	Education	28	7	10

Table 31

Summary of Demographic Characteristics of the Distinct Group (n = 44)

	Number	Percent
Gender (n = 44)		
Female	34	77.3
Male	10	22.7
Age (n = 44)		
Mean age in Years	31.0	
Range in Years	18-49	
Years in Alberta (n = 44)		
Mean	21.5	
Range	1-45	
Faculty (n = 43)		
Education	17	39.5
Arts	7	16.3
Nursing	5	11.6
Science	5	11.6
Business	3	7.0
Native Studies	1	2.3
Unclassified	2	4.6
Graduate studies	1	2.3
Rehabilitation	1	2.3
Physical Ed	1	2.3

There were 34 females and 10 males in the sample. The mean age was 31.0 years with a range from 18 to 49 years. The mean years of residency in Alberta was 21.5 years with a range from 1 to 45 years. The distribution of students across faculty was: education (n = 17), arts (n = 7), nursing (n = 5), science (n = 5), business (n = 3), native studies (n =1), unclassified (n =2), graduate studies (n = 1), rehabilitation medicine (n = 1), physical education (n = 1), and unknown (n =1). Given the sampling technique, it is not surprising that the sample represented a range of faculties. All but one of the final sample were undergraduate students. It may be that significant differences between life experiences of graduate and undergraduate students are present which may have an important impact on MBSS and task responses.
Similarly, important differences may exist between members of different faculties, age groups or gender. For the purposes of this study, only the demographics of age and gender were examined for possible differences in MBSS and task responses. The results of these analyses are reported in a later section.

Test-retest Coefficients

The means, standard deviations, and test-retest reliability coefficients are reported in Table 32 for the total MBSS and for each of the four situations. The test-retest coefficients for the MBSS based on responses from 44 students over a six month interval were .48 ($p \leq .001$) for the total monitoring score across four situations and .54 ($p \leq .001$) for the total blunting score across four situations. The highest coefficients of stability for both monitoring and blunting were demonstrated in the dentist situation (monitoring: $r = .60$, $p \leq .001$; blunting: $r = .61$, $p \leq .001$). The coefficients of stability for monitoring in the hostage situation and the airplane situation and for blunting in the layoff situation were statistically non-significant.

Table 32

Comparisons of MBSS Scores Tested on Two Occasions (n = 44)

	MBSS 1		MBSS 2		
Monitoring	Mean	SD	Mean	SD	r
Total	9.82	3.2	10.27	2.7	*0.48
Situation					
Dentist	1.96	1.1	2.04	0.9	*0.60
Hostage	3.16	1.0	3.25	0.9	0.32
Layoff	2.36	1.4	2.30	1.1	*0.45
Airplane	2.34	0.9	2.68	0.9	0.37

	MBSS 1		MBSS 2		
Blunting	Mean	SD	Mean	SD	r
Total	4.02	2.4	3.77	2.1	*0.54
Situation					
Dentist	1.00	0.9	1.11	0.9	*0.61
Hostage	0.80	1.0	0.82	0.9	*0.48
Layoff	1.14	0.8	0.66	0.5	0.12
Airplane	1.09	1.0	1.18	1.0	*0.50

Note. * $p \leq .001$

MBSS 1 = MBSS tested on the first occasion

MBSS 2 = MBSS tested on the second occasion

A comparison was made of the cognitive informational style assigned to each student based on the total monitoring and blunting in the initial MBSS and the MBSS retest.
A list of the total monitoring and blunting for each student in the initial MBSS and in the MBSS retest is presented in Table 33. Cognitive informational style categories changed in 3 (6.8%) of the students based on both monitoring and blunting. Cognitive informational style categories changed in 14 (31.8) of the students based on the total monitoring only. Cognitive coping categories changed in 11 (25.0%) of the students based on the total blunting only.
Only 16 (36.4%) of the 44 students did not change cognitive informational style category.

Table 33

Assignment to Cognitive Informational Style Categories

Based on Scores on the Initial MBSS and the MBSS Retest

Category	MBSS		MBSS Retest		Category	MBSS		MBSS Retest	
	M	B	M	B		M	B	M	B
	11	3	11	2		8	2	9	*4
HM/LB	14	1	10	1	LM/LB	9	3	*10	1
	14	1	13	3		8	0	*12	2
	12	0	13	*4		8	2	5	2
	12	2	14	1		9	1	*13	2
	15	1	* 7	3		8	2	*12	2
	13	3	13	*6		9	3	*10	2
	11	0	* 9	2		7	3	*11	2
	14	3	12	*6		5	3	*11	2
	15	2	14	*4		5	3	9	*4

Category	MBSS		MBSS Retest		Category	MBSS		MBSS Retest	
	M	B	M	B		M	B	M	B
	15	5	* 9	9		7	6	*10	*3
HM/HB	12	10	12	9	LM/HB	4	6	2	5
	11	6	* 8	4		4	5	8	7
	11	8	10	4		6	5	9	6
	14	4	12	*3		7	4	7	4
	15	5	16	7		8	5	*10	*3
	10	5	* 8	6		9	5	*15	*1
	10	6	* 8	7		6	5	*10	4
	13	4	12	5		9	6	8	*2
	11	4	11	*2		7	4	8	*2
	10	8	13	*3		6	6	8	6
	13	7	10	5		7	10	9	5

Note. * = Change in cognitive informational style category
M = Total Monitoring   B = Total Blunting
HM/LB = High Monitoring/Low Blunting
LM/LB = Low Monitoring/Low Blunting
HM/HB = High Monitoring/High Blunting
LM/HB = Low Monitoring/High Blunting

Taken together, the results of the evaluation of the stability of the MBSS indicate that the trait, cognitive informational style, may be very unstable over a 6 month interval. Of the situations in the MBSS, the highest reliability coefficients were on the monitoring and blunting scores for the dentist situation. This may indicate that the dentist situation represents a relevant situation in terms of the everyday experiences in the lives of this population of students.

It might be argued that the interviews may have biased the result of the MBSS retest. To offset this possibility, MBSS retesting was conducted one week after the interviews. It also should be noted that only 1 of the 4 MBSS situations was discussed by any given student during the interview.

Inter-rater Reliability

The percentages of agreement between the two expert markers on scoring a randomly selected sample of transcript data are presented in Table 34. Based on a random sample of 162 excerpts from the transcripts, the overall inter-rater reliability for the independent transcript interpretations was 91.2%. As shown, with two exceptions, the level of agreement is high for each situation.

Table 34

Percent of Agreement In the Transcript Interpretations

	Subscales			
	Monitoring		Blunting	
Situation	n	% Agree	n	% Agree
Task				
Elevator	9	100.0	9	88.9
Interview	9	100.0	9	88.9
Disease	9	100.0	9	100.0
Travel Delay	9	100.0	9	88.9
Social	9	77.7	9	88.9
Talk	9	100.0	9	66.7
Post-exam	9	100.0	9	88.9
Expenses	9	100.0	9	100.0
Miller's Situations				
Dentist	2	50.0	2	50.0
Hostage	2	100.0	2	100.0
Layoff	4	100.0	4	100.0
Airplane	1	100.0	1	100.0

Response Frequencies in the Interview Data

For some situations, one or more students were unable to imagine themselves within a given situation. In those circumstances, no blunting or monitoring responses were made. Complete response data were available for 40 students. In the tables that follow, sample sizes of less than 44 arise from this cause.

The frequencies for monitoring and blunting on each of the situations discussed in the interviews are provided in

Table 35. The spread in the response frequencies for both monitoring and blunting across the eight situations that were selected in Substudy IV for the interview task is similar to the spread in the response frequencies for monitoring and blunting across the MBSS situations. This would suggest that the eight new situations behave in a similar way to the situations from the MBSS and that the situations and the items in the MBSS may be representative of all hypothetically threatening situations. A greater variability was found in the blunting response frequencies compared to the monitoring response frequencies. The total number of students monitoring in the situations from the task ranged from 33 to 44 (75.0% to 100%). The total number of students blunting in the situations from the task ranged from 1 to 35 (2.3% to 75.0%). More than 30 students described at least one blunting strategy in the disease situation and the post-exam situation of the task. Only 1 student reported at least one blunting strategy in the expense situation. Fewer than 20 students reported at least one blunting strategy in the remaining situations from the task: elevator, job interview, travel delay, social, and talk.

Based on the spread in response frequencies, it could be anticipated that the blunting scores on the interview data may be more discriminating than the monitoring scores in terms of identifying differences in coping strategies among the four different cognitive informational style groups.

Table 35

Frequencies for Monitoring and Blunting in the Situations Discussed in the Interviews

Situation	Monitoring			Blunting		
Task	n	f	% M	n	f	% B
Elevator	44	43	97.7	44	15	34.1
Interview	44	44	100.0	44	17	38.6
Disease	44	37	84.1	44	31	70.4
Travel delay	43	41	95.3	43	16	37.2
Social	41	41	100.0	41	10	24.4
Talk	44	44	100.0	44	17	38.6
Post-exam	44	33	75.0	44	33	75.0
Expense	44	35	79.5	44	1	2.3
MBSS						
Dentist	9	7	77.8	9	7	77.8
Hostage	12	11	91.7	12	4	33.3
Layoff	17	17	100.0	17	2	11.8
Airplane	6	6	100.0	6	3	50.0

Note. % M = percent of students monitoring
% B = percent of students blunting

Comparison of Interview Scores with MBSS Retest Scores

Miller's Situations

One of the four MBSS situations was randomly assigned to each of the DG prior to their interview. Of the sample of 44 students in the DG, 9 (20.4%) were assigned to the dentist situation, 12 (27.3%) were assigned to the hostage situation, 17 (38.9%) were assigned to the layoff situation, and 6 (13.6%) were assigned to the airplane situation. Comparisons between total monitoring and total blunting scores on the MBSS retest and whether or not the students gave a monitoring and/or a blunting strategy in the interview using the MBSS situations are presented in Table 36. None of the point biserial correlation coefficients between monitoring scores on the MBSS retest and the monitoring scores on the interviews using the MBSS situations were statistically significant. Correlation coefficients could not be computed for monitoring in the layoff and airplane situations because all students had at least one monitoring response to these situations. The point biserial correlation coefficients between total blunting score on the MBSS retest and blunting scores on the interview responses to the hostage situation (rpb = .77, $p \leq .05$) and the airplane situation (rpb = .85, $p \leq .001$) were statistically significant. Given the small sample size caution is advised in generalizing these findings. However, these results appear to support the notion that the blunting scores on the interview data may be more discriminating than the monitoring scores on the interview data.

Table 36

Comparisons of Monitoring and Blunting in the MBSS Retest with Interviews Using Miller's Situations

	Total Interviewed	Monitoring n	Mean#	SD	rpb
Dentist	9	7	0.89	0.4	0.23
Hostage	12	11	0.92	0.3	-0.31
Layoff	17	17	1.00	0.0	(.)
Airplane	6	6	1.00	0.0	(.)
		Blunting n	Mean#	SD	rpb
Dentist	9	7	0.78	0.4	0.50
Hostage	12	4	0.33	0.5	**0.77
Layoff	17	2	0.12	0.3	-0.09
Airplane	6	3	0.50	0.6	*0.85

Note. (.) coefficient cannot be computed because all people had at least one monitoring response
* $p \leq .05$
** $p \leq .001$

# Mean is the proportion of people who gave at least 1 monitoring (blunting) strategy in the interview
n is the number of people who gave at least one monitoring (blunting) strategy in the interview.

Situations From the Task

The results of a comparison between the total monitoring and blunting scores on the MBSS retest and the scores on the situations from the task are presented in Table 37. There was no significant correlation between the total monitoring score on the MBSS retest and the total monitoring score on the interview task ($r = .14$, n.s.). The total monitoring score on the MBSS retest was not related to the monitoring score on any of the individual situations included in the interview task. The total blunting score on the MBSS retest was significantly correlated with the total blunting score across the eight situations from the interview task ($r = .58$, $p \leq .001$) and with the blunting score on the talk situation ($rpb = 0.45$, $p \leq .001$), the disease situation ($rpb = 0.31$, $p \leq .05$), and the post-exam situation ($rpb = 0.26$, $p \leq .05$) of the interview. Correcting for attenuation, given the internal consistency of the blunting items from the MBSS (alpha = .58), the relationship between the total blunting score on the MBSS retest and the total blunting score on the interview task is .76.

Table 37

Comparison and Contrast of Monitoring and Blunting in the MBSS Retest and the Task

		Monitoring				
		Task		MBSS		
	n	Mean	SD	Mean	SD	r
Total	40	7.28	0.8	10.27	2.7	0.14
Situation		Mean#	SD			rpb
Elevator	44	0.98	0.2			0.13
Interview	44	1.00	0.0			(.)
Disease	44	0.84	0.4			0.02
Travel delay	43	0.95	0.2			-0.02
Social	41	1.00	0.0			(.)
Talk	44	1.00	0.0			(.)
Post-exam	44	0.75	0.4			0.04
Expenses	44	0.77	0.4			0.16
		Blunting				
		Task		MBSS		
	n	Mean	SD	Mean	SD	
Total	40	3.30	1.5	3.77	2.1	**0.58
Situation		Mean#	SD			rpb
Elevator	44	0.34	0.5			0.12
Interview	44	0.41	0.5			0.22
Disease	44	0.71	0.5			*0.31
Travel delay	43	0.37	0.5			0.22
Social	41	0.24	0.4			0.24
Talk	44	0.39	0.5			**0.45
Post-exam	44	0.75	0.4			*0.26
Expenses	44	0.02	0.2			0.16

(.) coefficient cannot be computed because all people had at least one monitoring response

* $p \leq .05$ ** $p \leq .001$

Mean# is the proportion of people who gave at least 1 monitoring (blunting) strategy in the interview

n is the number of students for whom data was available

Using the mean score for monitoring and the mean score for blunting as cut-off scores, students were placed in high and low monitoring categories and high and low blunting categories based on their MBSS retest results. Two separate analyses of variance procedures were performed to test the main effect of high and low monitoring groups on the total monitoring score on the interview task and to test the main effect of high and low blunting groups on the total blunting scores on the interview task. There was no significant main effect for high and low monitoring groups on total monitoring scores in the interview task [F (1, 39) = .002, p = .961]. However, there was a significant main effect for high and low blunting groups on total blunting scores on the interview task [F (1, 39) = 9.24, p = .004].

Taken together, there is weak evidence of the convergent validity for the MBSS blunting subscale only. Lack of a similar relationships between the monitoring score on the MBSS retest and monitoring scores on the interview data may have been an artifact of the dichotomous scoring system applied to the interview data. Because most people applied at least one monitoring strategy in each of the situations of the task, the dichotomous scoring system may not have allowed effective discrimination between high and low monitors. Furthermore, it may be that the relationship between the blunting score on the task and the blunting score on the MBSS retest was influenced by the proximity of the interviews to the time of the MBSS retest. To test this possibility, the total scores for the monitoring and blunting subscale on the initial MBSS were compared to the total scores for monitoring and blunting on the interview task.

Comparison of Total Scores on the Interview Task with Initial MBSS Scores

No significant relationships were found between the total monitoring scores on the initial MBSS and the total monitoring scores on the interview task ($r = .24$, $p \geq .05$). A significant correlation was found between total blunting on the initial MBSS and total blunting on the interview task ($r = .42$, $p \leq .05$). Analysis of variance procedures were used to examine the effect of monitoring and blunting categories, determined from the initial MBSS data, on monitoring and blunting scores on the interview task. Compared to low monitors on the initial MBSS, high monitors did not significantly differ on total monitoring in the task [$F(1,39) = 1.88$, $p = .178$]. Compared to low blunters on the initial MBSS, high blunters on the initial MBSS had significantly higher total blunting scores on the task [$F(1,39) = 8.33$, $p = .006$].

Limitations

Like Miller's work, data from the present study were collected from university students. Perhaps in universities there is a tendency to reinforce abilities to make subtle distinctions and respond accordingly. Respondents from a more general population may be less inclined to discriminate amongst the variations of hypothetical situations. It may be that university students are exactly the wrong group to use for validation work of this kind. Given the sampling technique used, findings may be generalized only to sample with similar characteristics to the sample studied.

Summary and Conclusions Based on Comparisons of Task and MBSS Scores

Overall, the results are similar whether comparing total monitoring and blunting scores on the interview task with the total monitoring and blunting scores on either the initial MBSS or the MBSS retest. Similarity in these results support the conclusion that there is a weak positive relationship between the total blunting score on the MBSS and total blunting score on the interview task in this population. In turn, these results provide weak evidence of the representativeness of the situations and the blunting strategies in the MBSS.

These findings support previous research in which the blunting subscale of the MBSS was found to be positively correlated with coping behavior in threat (Miller, 1979b, 1987). Given the consistency in reports of higher mean scores on monitoring than on blunting in all the MBSS situations (for e.g., Steptoe, 1989; Van Zuuren & Wolfs, 1991) it is not surprising that the dichotomous scoring of the transcripts placed the majority of students in the high monitoring category. This may have contributed to the lack of significant findings resulting from comparisons of monitoring scores on the MBSS and monitoring scores on the task.

Subjective Interpretation of the Interviews

A subjective analysis of the transcripts was made to identify categories of strategies included in the student interview data. By way of exemplifying the findings, all strategies identified in the students' responses to the elevator situation are provided in Appendix E and summarized in the text. Since similar categories of strategies were found in the analysis of the other 7 situations included in the task, only new categories that were identified in these other situations are discussed. Furthermore, in the interest of space, no attempt was made to provide an exhaustive list of the strategies identified in the interview data related to the other seven situations in the task. Only a few examples are taken from the responses to these other situations to provide examples in the text for discussion. A comparison is made of the responses to the MBSS situations in the interview with the strategies reflected in the MBSS items and the categories of monitoring and blunting identified in the analysis of the responses to the situations from the task. Finally some general findings in terms of the complexity of the coping process and the problem this poses for measurement are put forward.

Monitoring Responses to the New Situations in the Interviews

Of the 44 students who responded to the elevator situation, 43 described monitoring strategies similar to those included in Miller's scale (Appendix E). These were identified using the criteria described previously in Table 26. The monitoring strategies that appeared in the data fell into three categories of information-seeking strategies (ISS) as follows: i) seeks information from others, ii) seeks information from personal knowledge and experience, and iii) seeks information from the environment. For simplicity, these will be referred to as social ISS, self

ISS, and environmental ISS respectively.

An example of a social ISS is found in one student's comments,

> [I would be] talking about it with the other people in the elevator. Maybe they would have an idea of what to do but I certainly wouldn't know what to do.

An example of a self CIS is found in another student's comment,

> I would think physically about all of the things that I could do to make me be the survivor, like lying on the ground rather than standing up.

Another student provides an example of an environmental CIS in her response,

> You want to have a certain amount of sensitivity to what is going on. You would be watching and listening.

No other new categories of strategies were identified in the interview data which could clearly be classified as monitoring and which did not fit the three categories of information-seeking.

Blunting Responses to the New Situations in the Interviews

Of the 44 students who responded to the elevator situation, 15 students mentioned strategies similar to those included in the MBSS. These strategies fit into two categories of cognitive avoiding/distracting strategies (CADS) as follows: i) social CADS and ii) self CADS. Social CADS included strategies in which the student reported talking to others about anything other than the threatening situation. For example one student indicated,

> I would start talking about something completely different. I would say, "Did you see Stanfield last night on T.V.?" You know, like change the focus of it so that you take it away from the anxiety.

Self CADS included strategies in which the student suggested mental exercises. For example one student said,

> Maybe trying to imagine myself outside the situation, like, you know, maybe just down on the street or something.

Another student suggested,

> Any thoughts that it can't be done or thought that we are all going to die or those sorts of things, you leave off.

Upon review of the interview responses to the other 7 situations from the task, a third category of CADS was identified, environmental cognitive avoiding/distracting strategies. Environmental CADS involve interaction with the environment for the purpose of distracting attention from the threat. For example, in response to the disease situation, one student commented,

> I would probably watch TV. You know, watch a program on TV, or read, get a book. Something light. Something that I could get into, like a murder mystery. Something that would just kind of take my mind off of it.

Other Responses to the New Situations in the Interviews

Based on some of Miller's theory, there were 4 other categories of strategies identified in the interview data which could be placed in blunting categories. These are humor, praying/hoping, reinterpretation, and suppression of competing activities. These categories all differ from CADS in that they in part focus on the threat.

Of 44 students who responded to the elevator situation, 17 students suggested that they might use humor to cope with the situation (Appendix E). This is a strategy which is not included in the MBSS (Table 1). However, it could be argued that the use of humor may be a means of cognitively blunting the threat by attempting to devalue the threat or reinterpret the situation (Fry, 1992). For example one student comments,

> You might joke about it to begin with. You know, when you are with other people, you might try to make it seem that it is not as bad as it could be or as dangerous I suppose.

Another category of strategies that focus on a more positive interpretation of the situation is praying/hoping. One student commented,

> I might try to make a bargain with God. I promise I will go to church if you will just get me out alive.

Another student said,

> I hope it doesn't move again.

Through prayer or hoping the individual may gain some sense of control through either appealing to a 'greater power' or focusing on the positive possibility of a good outcome.

Reinterpretation involves reevaluating the situation in a more positive light. In response to the interview situation, one student commented,

> I would try and keep in mind that, yes, it is important to me now, but I....it may not be important, say ten years from now or fifteen years. So if it

> doesn't go well, it's not the end of my life. Try and keep it in perspective.

Strategies were also identified which appeared to be congruent with Carver's and his colleagues' (1989) notion of suppression of competing activities. These strategies focus on eliminating any extraneous and controllable aspects of the threatening situation that would add to the distress. To the extent that this strategy focuses thought on the controllable aspects of the situation, it may remove attention from the more distressing and uncontrollable aspects of the situation.
For example, in response to the interview situation one student said,

> Plan my day, for the next day when the interview was happening to make sure that nothing stressful happens along the way, like you can't find a parking place and things like that.

Summary and Directions Based on Responses to the New Situations

In summary, there were three definitive categories of monitoring which were evident in the responses to the threat situations of the task. These were social ISS, self ISS, and environmental ISS. Similarly three categories of CADS were identified in the responses including, self CADS, social CADS, and environmental CADS. However, 4 other categories of strategies were identified in the interview data which are not included in the MBSS but which may be categories of blunting. These include humor, praying/hoping, reinterpretation, and suppressing competing activities. It may be that individuals who are categorized as high monitors/low blunters (HM/LB) based on the MBSS scores are more likely to use these other categories of blunting. These other categories of blunting strategies may offer members of the HM/LB group a means of reducing arousal without completely blocking the monitoring and processing of threat relevant information. Alternatively, strategies from categories of blunting other than CADS may be highly associated with specific situational configurations. Further research is necessary to establish whether or not specific combinations of monitoring and blunting categories are typically used in similar threatening situations of an uncontrollable nature and whether or not actual behavior in threat may be predicted using the MBSS scores. It would be of interest to conduct secondary analysis on the data to determine if these other categories of strategies are related to the monitoring and blunting subscales of the MBSS.

Interview Responses to Miller's Situations

The purposes of examining the interview data pertaining to Miller's situations were the following: i) to determine the extent to which Miller's situations generated strategies similar to those reflected in the MBSS items and ii) to determine the extent to which the categories of strategies identified in the previous section are represented in the interview responses to Miller's situations. Therefore, Miller's situations are dealt with in more detail than the situations from the task. To facilitate the presentation of the findings, a summary of the strategies identified in the interviews are presented in Table 38.

Table 38

Strategies Identified in the Interview Responses to Miller's Situations

Situation		Strategies												
	n	M1	M2	M3	M4	NM	B1	B2	B3	B4	NB	H	P/H	R	SCA
Dentist	9	4	0	2	0	4	0	4	2	1	4	0	0	0	0
Hostage	12	2	0	3	7	7	4	1	0	0	1	0	0	3	0
Layoff	17	0	9	0	2	11	2	0	0	0	2	0	0	6	0
Airplane	6	2	2	1	4	2	1	0	0	1	1	0	0	0	0

Note. n = the number of students who responded to the situation;

M1 to M4 = the 4 monitoring strategies in the order found in the MBSS;

NM = a new monitoring strategy not listed in the MBSS;

B1 to B4 = the 4 blunting strategies in the order found in the MBSS;

NB = a new blunting strategy not listed in the MBSS; H = humor;

P/H = praying/hoping; R = reinterpretation; SCA = suppresion of competing activities.

Dentist situation.

Of the 9 students who were asked to respond to the dentist situation, 7 students reported a total of 10 monitoring strategies. Four of the 7 students reported strategies similar to Miller's: 'I would ask the dentist exactly what he was going to do' (dentist, M1). These strategies fit with the social information-seeking strategies (social ISS) identified previously. Another two students mentioned a strategy similar to Miller's which involves watching the dentist's activities (dentist, M3). This strategy fits the category of environmental information-seeking strategies (environmental ISS). None of the students mentioned a strategy similar to Miller's : 'I would want the dentist to tell me when I would feel pain ' (dentist, M2). Also, none of the students indicated that they would monitor themselves for evidence of tissue injury as suggested in Miller's item: 'I would watch the flow of water from my mouth to see if it contained blood' (dentist, M4). Four students mentioned monitoring strategies unlike those included in the MBSS. Three of the 4 students reported a strategy involving thinking about why they need to see the dentist or what will happen. These all fit the self information-seeking category (self ISS). For example one student comments,

> I might be thinking, how bad can it be? Really, I have had my wisdom teeth removed a few years ago.

The fourth student suggested that she would talk to other people about their experiences with dentists.
A complete list of the strategies identified in the interview responses to the dentist situation are provided in Appendix F.

The interview response frequencies for Miller's strategies are somewhat similar to the item response frequencies conducted in Substudy I (see Table 10, Chapter IV). Miller's monitoring strategy pertaining to seeking information from the dentist (dentist, M1) received the highest rank on response frequency based on both the item response and the interview response results. Also, the strategy pertaining to monitoring for tissue injury (dentist, M4) received the lowest ranking on response frequency based on both the item and interview response results. All three categories of ISS (social, self, and environmental) are represented in the interview responses.

Of the 9 students who were asked to respond to the dentist situation, 7 students mentioned a total of 11 blunting strategies. Of the 7, 4 students suggested blunting strategies similar in nature to Miller's item: 'I would try to think about pleasant memories' (dentist, B2). These strategies fit with the self cognitive distraction/avoidance category (self CADS) identified in the responses to the 8 situations of the task. One student suggested a mental exercise to blunt, similar to Miller's strategy: 'I would do mental puzzles in my mind' (dentist, B4). Two students mentioned a strategy similar to Miller's: 'I would try to sleep' (dentist, B2). However, in both cases the students mentioned that they would like to be "put to sleep" or "knocked out" by the dentist as opposed to going to sleep of their own volition. None of the students suggested that they would 'take a tranquillizer or have a drink before going' (dentist, B1).

Four students described a blunting strategy not included in the MBSS. One commented,

> I would probably try to talk as much as possible to the dentist about anything.

This represents a social cognitive avoidance/distraction strategy (social CADS) discussed in the previous section.

Another student mentioned,

> I will be listening to music...

This strategy fits the category of environmental cognitive avoidance/distraction strategies (environmental CADS). The other two students suggested that they would avoid information by "closing their eyes".

The results of the subjective analysis are congruent with the item response frequencies reported previously (see Table 11, Chapter IV). The most common strategy among the blunting responses mentioned involve attempts to focus thoughts on other things. None of the students who were interviewed mentioned a strategy involving a 'tranquillizer or drink'. The corresponding item in the MBSS was identified as problematic based on a low response frequency. Of the three strategies not included in the MBSS, the strategy involving closing one's eyes may be a good potential replacement for the item with the lowest response frequency. The blunting strategies that were identified in the responses fit with the three categories of CADS found in the responses to the interview task: social CADS, self CADS, and environmental CADS.

Hostage Situation.

Of the 12 students who responded to the hostage situation, 11 students suggested a total of 19 monitoring strategies. Two students mentioned strategies similar to the MBSS item: 'I would stay alert and try to keep myself from falling asleep' (hostage, M1). Although neither student indicated they would try to keep from falling asleep, they did suggest they would attempt to stay alert. This represents a self ISS. None of the students indicated that they would use a strategy similar to the MBSS item: ' If there were a radio present, I would stay near it and listen to the bulletins about what the police are doing' (hostage, M2). Three students described strategies similar to Miller's: 'I would watch every movement of my captors and keep an eye on their weapons' (hostage, M3). These strategies fit the environmental ISS. Seven students suggested strategies similar to Miller's: 'I would make sure I knew where any possible exits were'(hostage, M4). However, seven students described monitoring strategies unlike those included in the MBSS. Of the 7, 5 suggested they would think about what might happen. For example, 'What happens if they blow up the building and you are still in it?' The other two suggested they would interact with the terrorists in order to gain information. The latter strategy represents a social ISS. A list of the strategies identified in the interview responses to the hostage situation are provided in Appendix G.

Overall, the rank order of the MBSS strategies, obtained by interview responses and by item response frequencies are similar. All three categories of ISS were found in the data.

Of the 12 students, 4 students suggested a total of 9 blunting strategies. All 4 students mentioned that they would try to think about something else, a strategy similar to Miller's: 'I would sit by myself and have as many daydreams and fantasies as I could' (hostage, B1). This strategy fits the self CADS. One student also mentioned she would engage in chit chat to take her mind off the situation. This is a strategy that fits the social CADS and is similar to Miller's: 'I would exchange life stories with other hostages' (hostage, B2). None of the students suggested they would either try to sleep (hostage, B3) or think about how nice it would be when they got home (hostage, B4). One student described a strategy which fits in the environmental CADS but is not included in the MBSS: 'Try and read a book or magazine.'

Three students described strategies not found in Miller's MBSS. All three students mentioned that they would try to think of the situation in a more positive light, a strategy that fits the category of reinterpretation.

Congruent with the item response frequencies, the interview response frequencies indicate that the strategy pertaining to attempting to sleep may be problematic. All three of the categories of CADS are represented in the interview responses. In addition, one of the other categories that fit Miller's broader theoretical notion of blunting was found in the responses.

Layoff situation.

All 17 students who responded to the layoff situation reported at least one monitoring strategy. A total of 22 monitoring responses were identified in the data. None of the students reported a strategy similar to Miller's: 'I would talk to my fellow workers and see if they knew anything about what the supervisor's evaluation of me said' (layoff, M1). Nine of the 17 students mentioned they would review their performance, a strategy similar to one of Miller's items (layoff, M2). This strategy fits in the self

ISS category. None of the students suggested they would try to remember any conflicts they had experienced with their supervisor, a strategy included in the MBSS (layoff, M3). Similar to one of Miller's strategies (layoff, M4), two students indicated that they would compare their performance with that of their fellow employees.

Eleven of the students also mentioned monitoring strategies not included in the MBSS. Of the 11, 6 students indicated that they would talk to other employees about who might lose their job. This is a social ISS unlike those in Miller's MBSS. Two students suggested they would review a copy of their evaluation. This fits the environmental ISS category. Three students indicated that they would think about their standing in terms of criteria for job cuts other than performance (eg., seniority, wages). One of the 3 students also suggested he would ask his supervisor to describe the criteria being used to determine layoffs. A list of the strategies identified in the interview responses to the layoff situation are provided in Appendix H.

Similar to the rank order of Miller's strategies based on the item response frequencies, the most popular of Miller's strategies in the interviews involves reviewing one's performance (layoff, M2). Also, both analyses indicate a low response frequency on Miller's item pertaining to asking workers about their knowledge of a fellow worker's evaluation (layoff, M1). Among the interview responses there were examples of social, self, and environmental ISS.

Of the 17, only 2 students described at least one blunting strategies similar to those included in the MBSS. A total of 4 blunting strategies were found in data. Both students reported strategies that involve engaging in activities to take their mind off the situation, a strategy similar to Miller's: 'I would go to the movies to take my mind off of things' (layoff, B1). These fit the environmental CADS category. One of the 2 students also suggested that he would attempt to sleep or have an alcoholic beverage. The former strategy of sleeping fits the self CADS category. Although the strategies of sleeping and drinking are included as options for other situations in the MBSS, (eg., dentist, hostage, and airplane) these are not offered as an option in the layoff situation.

Six students mentioned strategies that might be perceived as positive reinterpretation or positive growth. For example, one student stated,

> ...maybe this is a golden opportunity to move into something better.

In summary, only 2 students spontaneously offered strategies similar to the blunting items provided in the layoff situation. Only examples of self and environmental categories were found in the interview data. However, 6 students mentioned a strategy that fit into a category which is congruent with Miller's broader theoretical view of blunting , reinterpretation.

Airplane situation.

All 6 of the 6 students who responded to the airplane situation mentioned at least 1 monitoring strategy. A total of 11 monitoring strategies were identified in the interview data. Of the 6 students, 4 students mentioned a strategy that involved talking to another passenger, a strategy similar to Miller's: 'I would talk to the person beside me about what might be wrong' (airplane, M4). This strategy fits the social ISS category. Two students reported strategies similar to Miller's: 'I would call for the stewardess and ask her exactly what the problem was' (airplane, M2). However, in neither of these reports did the student indicate that she expected to receive a full account of the problem. One of the 2 students suggested that the stewardess would not likely provide passengers with full details for fear of inciting hysteria. The other student said,

> I think that I would seek out the stewardess, perhaps she would have something to say.

The same student suggested that she would watch the stewardess's actions, a strategy somewhat similar to Miller's third monitoring option in the airplane situation (airplane, M3) and a strategy that fits in the environmental

ISS. Three students suggested they would think about emergency procedures similar to Miller's item: 'I would carefully read the information provided about safety features in the airplane and try to make sure I knew where the emergency exits were' (airplane, M1). This strategy fits the self ISS category. Two students mentioned strategies not included in the MBSS. One of the 2 students suggested that she would "be watching the clock" apparently counting the 'minutes left in the flight'. The other student suggested she would 'look out of the window' to determine the ground conditions for a possible emergency landing. A list of the strategies identified in the interview responses to the airplane situation are provided in Appendix I.

There is no similarity in terms of the rank order of Miller's monitoring strategies based on the MBSS item responses and on the interview responses. This may be a result of the small sample that responded to the airplane situation during the interviews (n = 6). Analyses of the item responses and the interview responses both indicate that Miller's item pertaining to requesting information from the stewardess (airplane, M2) may be problematic in terms of how it is worded. Examples of social, self, and environmental ISS were found in the interview responses.

Of 6 students who responded to the airplane situation, 3 students each mentioned one blunting strategy. Of the 3, 1 student suggested she would focus on breathing slowly, this is a self CADS which is unlike any of the blunting options Miller includes in the MBSS. Another student suggested she would read a book, a strategy similar to Miller's: I would settle down and read a book or magazine or write a letter (airplane, B4). This strategy represents an example of the environmental CADS. The third student suggested she would talk to a fellow passenger to take her mind off the situation, a strategy similar to Miller's: 'I would make small talk with the passenger beside me' (airplane, B1). This represents an example of a social CADS.

There are some similarities among the results of the interview response and the item responses. Of the 4 blunting strategies in the MBSS, only the two strategies with the higher ranking based on the item response frequencies were mentioned in the interviews. All 3 of the categories of ISS are mentioned in the interview responses.

Summary and Directions.

Generally, the results of the comparison between the MBSS item responses and the interview responses to the MBSS situations are similar. The rank order of the strategies based on the interview responses point to similar problematic items identified previously using the MBSS item response frequencies. Alternatively, the fact that similar strategies were mentioned in the interviews provides some indication that some of the items in the MBSS are representative of the ISS and the CADS. Furthermore, the interview method appears to be a fruitful means of developing relevant strategies to replace the items identified as problematic.

The interview responses to all the MBSS situations included examples of strategies from social, self, and environmental ISS and CADS with one exception. There was no example of a social CADS mentioned by the respondents in the layoff situation. However, there were examples of another category of blunting strategies identified among the interview responses to the MBSS situations. Strategies that fit the category of reinterpretation were found in the interview responses to both the layoff and the hostage situations. These findings lend support to the notion that the MBSS items may underrepresent the construct of cognitive informational style, particularly in terms of blunting. If blunting is only distraction (CADS) and monitoring is only information seeking (ISS), then there are at least 4 other kinds of strategies mentioned by people that may be used to render the situation less psychologically distressing. The strategies are as follows: humor, praying/hoping, reinterpretation, and suppression of competing activities. These 4 could be placed in blunting if one took a broader view than Miller apparently does.

It may be that the lack of examples of reinterpretation in the responses to the dentist and airplane situations may be due to the small samples interviewed. Similarly, the lack of examples of humor, praying/hoping, and suppression of competing activities in the responses to any of the situations in the MBSS could have been due to the small sample size. Alternatively, there may be differences in the perceived characteristics of Miller's situations and the respondents themselves that are related to the particular strategies found in the responses. It would be of interest to replicate this work using a larger sample size to further explore the extent to which patterns of strategies may be used and the extent to which the patterns of behavior may be associated with the specific situational conditions or personal characteristics.

Other Findings

Subjective analysis of both the interview responses to the task and to Miller's situations provided some evidence of the complexity of the person-environment interaction and of the process of coping. This evidence is discussed in terms of the implications for measurement using the MBSS.

In spite of the fact that the same situations were given to the students, important differences may exist among students in terms of imagined contexts. For example, in response to the elevator situation one student said,

> I think like a glass or open elevator, or on a really big building, that would probably be worse than say just going up a floor or two.

and another student said,

> I imagine this happening in a glass elevator in the hospital. So we would all just turn around and watch out what all the little bees were doing down below. That's no big deal. But, if this were a great huge elevator and in some building you'd never been in...

Similarly, in response to the airplane situation, 2 students indicated that whether or not they talked to the person next to them depended on: who is sitting next to them and what kind of mood the student was in. In response to the layoff situation another student indicated that whether or not he would ask the supervisor about the situation depended on what his relationship was with the supervisor.

Also, there appeared to be evidence of potential differences in terms of point of time imagined. In response to the hostage situation two students suggested that what they would do would depend on how long the situation went on. For example, one of the students remarked,

> Depends on how long the hostage taking lasts. Immediately and for the first period of it, I am probably going to focus more on analyzing the situation. You know, looking for the door, looking for

> a way that I can get the weapon away. Looking, you know, factoring all of the other things. So I am going to occupy my mind on the immediate situation for the first period of time. If it goes on for an extended period of time, then I am likely to go back into kind of the dental pain exercise, where you are thinking about yourself on a beach in Hawaii and not sitting on the floor of the bank or the floor of the remand center as a hostage.

Threatening situations have multiple stimuli made evident by differences among the students in terms of what specifically they found threatening about the situation. For example, in response to the elevator situation one student commented,

> I would be wondering if I was going to miss the appointment.

and another student commented,

> I don't know how safe it would be in a plunging elevator.

The extent to which an individual could draw information from his or her general knowledge would depend on life experience. One student suggested,

> I actually have no idea about the mechanics of an elevator, so I don't know what the potential is of the

> danger of this elevator or anything like that. So I would be more concerned about my safety, my personal safety.

Another student comments,

> ..people have assured me that in modern elevators, the chances of cables breaking are between zero and nil. Apparently there are 3 to 8 different sets of cables that all counterbalance each other. I am not an engineer, so I don't understand all of it but it certainly makes me feel better because I have been caught in an elevator for a few minutes at a time before.

In addition, the individual may have some misconceptions about the situation which could influence interpretation of the situation. For example one student says,

> ...fifteen minutes, which you know is quite a long time, I guess, considering you are running out of oxygen probably.

These examples indicate that there is a broad latitude for interpretation of the situations in terms of the context. This raises questions about the validity of using the scores on the MBSS to predict behavior. Given the description of the threatening situation in the MBSS, the student may endorse a strategy in the MBSS because there are conditions, personal and situational, within a range of possible contexts that may be imagined in which she or he would use that strategy. However, when actually in the real situation the supporting conditions may or may not be present. It may be that the MBSS lacks precision in terms of defining the conditions in which a particular strategy may be used.

Another important finding based on the subjective interpretation of the interviews is that the number of strategies reported alone may not represent the extent to which a student is using a particular strategy. For example, in response to the elevator situation one student suggested a number of monitoring strategies as follows,

> I think the way you act is going to be influenced by the way the other people act in the situation as well...
>
> I wouldn't know but I would imagine that umm..someone can tell if an elevator is stopped at a floor.
>
> I might try and get the roof off to see where , you know, so you could see where you actually were...

then the same student suggests,

> stop what you are doing for about five minutes and reduce the anxiety....umm I think maybe breathing deeply or trying to talk to the other people....if nothing else try and crack a few jokes with them just to , you know, just to get yourself laughing or get someone else laughing. Just so that you are not

> thinking about the situation at hand.

By contrast another student also suggests that he would initially engage in monitoring behavior,

> Have a discussion with other people in there as to what they thought was the best plan of event or best action to take....and if we ended up stuck there for quite a while, I would probably suggest that we pop the top off and see where we are....investigate, not saying that I would climb out of the elevator because, of course, you would have to consider the possibility that it might start moving again.
>
> ...you are probably better off just to stay in the elevator and wait for someone to fix it.

During the time he was waiting for help this student stated he would,

> Probably talk with the other people. Ummm...anything. What they were doing. Why we were in the elevator. Of course, that depends on the people in the elevator, you know, of course. Ummm...anything that anybody would talk about rather than sit there and worry about it, I would much rather have a discussion with someone else.

The responses to the elevator situation point out an element of process that is not captured in Miller's structural approach to scoring. Both students indicate that they would monitor first and then blunt. The order of strategies may be an important factor which bears relevance to the outcomes of stressful situations and which is not currently measured in the MBSS. Another observation is that the first student seems to suggest that he would intermittently blunt to reduce his distress. Using Miller's scoring procedure based on the number of strategies suggested, the first student would score higher on blunting because he mentioned two CADS, self and social. The second mentioned only one blunting strategy, a social CADS. However, in view of the notion that the first student seems to indicate that he would monitor and intermittently blunt while the second student would monitor and then blunt for the remainder of the time, it appears that the second student may be spending more time blunting even if only one strategy is used.

Discussion and Direction Based on Findings

Doubts concerning the validity of using vignettes and Miller's suggested scoring model to predict behavior in real threat situations arise from the evidence of the complexity of the person-environment interaction and the notion of process captured by the interview method.

The underlying assumption of the MBSS is that the 4 situations in the MBSS are universally perceived to have similar characteristics. The scores on the MBSS reflect the trait component of the person-situation interaction. However, the data appears to challenge this assumption. The responses to the interviews together with previous findings based on frequencies of strategy by situation (Chapter VI) and the characteristics of the 4 situations in the MBSS (Chapter VIII) indicate that there may be a broad range of interpretations of the same situation between individuals and that the situations may differ on some important characteristics. In view of Miller's transactional trait approach it may be more appropriate to examine the monitoring and blunting scores on each situation in the MBSS independently rather than collapse monitoring and blunting across situations. Furthermore, it would seem more appropriate to incorporate some measures of the characteristics of the situation such as the intensity, the controllability, and the predictability of threat using a Likert scale. These changes in scoring procedures would reduce some of the inconsistencies between Miller's theory and the MBSS structure and would enrich the data obtained from the MBSS . These changes in the scoring model may increase the extent to which the MBSS data may provide some insight into the particular situational and personal configurations which interact to define behavior. Furthermore, calculating differences on monitoring and blunting scores between situations may provide some evidence of the degree of flexibility in the application of strategies from situation to situation. Information pertaining to the flexibility in the application of strategies may play an important role in the extent to which the individual's responses to the demands of the situation are appropriate in terms of the impact and outcome of stressful events (Compas, Forsythe, & Wagner, 1988).

A more difficult notion to capture in the structural approach to measurement represented in Miller's scale is the process of coping. The interview responses made evident the fact that there may be an order of application of the strategies and subtle variations in degree that are not measured in the MBSS but may be important in terms of outcomes. For example in some situations, an individual may engage in monitoring strategies until information desired is obtained or until all known relevant sources have been tapped. Then the individual may resort to blunting. Another individual may engage in blunting strategies initially and intermittently monitor. It also was made evident in the interview responses that the total number of monitoring or blunting strategies mentioned may not necessarily represent the extent or degree to which the individual is monitoring or blunting. Given these concerns about the limitations of the structural approach to measurement represented in the MBSS, more process research is recommended. Actual coping responses in real threat need to be examined and compared to MBSS item responses to demonstrate the extent to which the

MBSS predicts behavior.

CHAPTER IX

CONCLUSIONS AND IMPLICATIONS

In this chapter, the results of the validation study including the critique of Miller's hypotheses, the review of the literature, and the results of this research are drawn together. Conclusions pertaining to substantive, structural, and external aspects of validity are formulated based on the findings . An evaluative judgment related to the adequacy and appropriateness of inferences and actions drawn from MBSS scores is put forward.

Inconsistency Between Theory and Scoring Model

The monitoring and blunting hypothesis supplemented by the minimax hypothesis presents a trait formulation to explain behavior in threat. Miller's trait formulation is congruent with the approach-avoidance distinction which has dominated the investigation of personal variables in the literature pertaining to coping with threat. Also, Miller's trait formulation uses a contemporary transactional approach to explain behavior. Compared to the traditional situationist and personalist models, Miller's transactional model provides a better account of contradictory research findings pertaining to the preference for information in threat and the impact of threat-relevant information on arousal. Miller (1992) suggests that the extent to which an individual will monitor (seek threat information) and blunt (distract) in a threatening situation depends on the characteristics of the situation and the individual's ability and inclination to use monitoring and blunting strategies. Monitoring compared to blunting is a more arousal inducing activity, particularly in uncontrollable threatening situations (Miller, 1992). According to Miller (1988b), scores on the MBSS can be used to identify an individual's cognitive informational style (CIS) and predict the extent to which that individual will monitor, blunt, and experience arousal in threatening situations.

A major problem with Miller's monitoring and blunting hypothesis is that it is couched in general terms detracting from clarity and precision in definition and prediction. The specific situational and personal configurations which interact to define behavior and moderate arousal need to be more clearly explicated.

A major inconsistency between the monitoring and blunting hypothesis and the MBSS surrounds the issue of dimensionality. Miller (1988b) conceptualizes monitoring and blunting as if they are on a continuum. However, Miller advocates the use of a scoring model which treats the monitoring and blunting subscales as separate and distinct. Indeed, based on this research and the research of others (eg. Van Zuuren & Wolfs, 1991), the monitoring and blunting subscales across the 4 MBSS situations appear to be unrelated. Hence the notion of a continuum appears to be at odds with empirical findings. Research reports (for e.g., Miller, 1987; Miller, Brody, & Summerton, 1988) make reference to two subsets of cognitive informational style, high monitoring/low blunting and low monitoring/high blunting . However, it seems reasonable that some individuals should be classified as high monitoring/high blunting and low monitoring/low blunting. This certainly was the finding in the present study. Four groups of students were identified: high monitoring/low blunting, low monitoring/high blunting, high monitoring/high blunting, and low monitoring/low blunting. Thus there appear to be a flaw in Miller's hypotheses in that they are perhaps incomplete. Of 271 students who completed the initial MBSS, 113 (41.7%) students were placed in a subset of cognitive informational style which is inconsistent with Miller's monitoring and blunting hypothesis. As a result it is not possible to make predictions about these 113 students based on the monitoring and blunting hypothesis. It would seem essential to attend to this inconsistency in order to salvage the MBSS and the monitoring and blunting hypothesis.

Given attention to the inconsistency between theory and the suggested scoring model as mentioned, it would be of interest to examine the possible differences in the 4 subsets of CIS in future study. Due to method, it was not feasible to study possible differences in these subsets in the present study.

Content Relevance and Representativeness

The item frequencies and the alpha coefficients for the monitoring (.66) and blunting subscales (.58) obtained from data analysis in Substudy I point to possible problems in terms of the content relevance and representativeness of the situations and items in the MBSS. Only the internal consistencies for the monitoring and blunting subscales have been reported previously (for e.g., Miller, 1987; Van Zuuren & Wolfs, 1991). Compared to the results of this study, Miller (1987) reports higher alpha coefficients for both the monitoring and blunting subscales. Differences in reported internal consistencies may be due to differences in the relevance and representativeness of the MBSS items and situations among the samples studied.

Indirect evidence of the content relevance and representativeness of the situations was obtained from analyses of the students' perceptions of the characteristics of the MBSS situations (Substudy III). The results indicated that, generally, the members of the sample perceived the MBSS situations to be threatening, uncontrollable situations. The hostage situation was the least imaginable of the MBSS situations. This is congruent with the results of a series of situation by strategy correlations using MBSS group data (Substudy I). The hostage and airplane situations compared to the dentist and layoff situations showed lower correlation coefficients. Taken together these results indicate that for the sample studied, the hostage situation in particular and, perhaps also, the airplane situation may not be relevant to the sample studied.

More direct evidence of item relevance was obtained through examining item response frequencies. The results indicated that 3 monitoring items and 9 blunting items may be inadequate (Substudy I). Analyses of interview data on the MBSS situations (Substudy V) provide some tentative support for the findings based on the item response frequencies. Strategies identified as problematic based on item response frequencies were either not found or were infrequently found in the interview responses to the MBSS situations. In contrast, new monitoring and distracting (blunting) strategies were found in the interview data. Replication of the interviews using the MBSS situations and a larger sample would be necessary to strengthen these findings. The interview technique may also unearth more typical strategies to replace the apparent problematic items. Another potentially fruitful approach to future research to determine the relevance of the MBSS items and situations may be to ask students to provide rationale for their MBSS responses.

There was a significant relationship found between blunting scores on the MBSS and blunting scores on the interview responses to the 8 new situations in the task ($r = .58$, $p \leq .001$). Since both scores were determined on the basis of strategies from the cognitive avoiding/distracting category (CADS), the significant correlation between the two scores provides some indication that overall the strategies in the MBSS may be representative of the CADS used in hypothetical threatening situations (Substudy V).

A problem arises from Miller's inconsistent use of blunting and distraction. Miller appears to have restricted the MBSS to one kind of blunting strategies, ie. cognitive avoidance/distraction strategies (CADS). However, based on some of Miller's theory, there were 4 other tentative categories of strategies identified in the interview responses to the 8 situations from the task as follows: humor, praying/hoping, reinterpretation, and suppression of competing activities.

The 4 categories of strategies could be placed in blunting. Only one of these 4 newly identified and tentative categories of blunting, reinterpretation, was also found in the interview responses to two of the situations from the MBSS, the hostage and the layoff situations. This provides some support for the notion that the MBSS may underrepresent blunting. It would be useful to conduct an indepth secondary analysis on the interview data to determine possible relationships between these 4 new blunting categories and the monitoring and blunting subscales of the MBSS. It may be that people who have high monitoring scores on the MBSS may use some blunting categories other than CADS because these other categories of blunting strategies offer a means of reducing arousal without completely blocking the monitoring and processing of threat relevant information. If this is the case, it would not appear to be logical or reliable to predict arousal based on the monitoring and distracting scores obtained from the MBSS.

Structure of the MBSS

Scoring Model

Miller suggests the total scores on the monitoring subscale and the total scores on the blunting (distracting) subscales should be examined separately (MBSP). Miller has used either the mean or the median of these subscales as cut-off points to categorize individuals as high or low monitors and high or low blunters (distractors). Given the low reported internal consistencies for both subscales in this study, it may be more appropriate to consider the error in testing and use two cut-offs for each subscale to identify high and low scores in each subscale. However this solution may not be of practical benefit, particularly in terms of the blunting (distracting) subscale. For example, application of this scoring system would mean that only those who had a score of 0 or 7 on the blunting subscale could be categorized as low or high blunters respectively. This would reduce the number of students eligible for study considerably. A more important consideration is whether or not cognitive informational style (CIS) should be viewed as categorical or continuous.

The MBSS and the currently recommended scoring procedure (MBSP) may not accurately or adequately capture the person-environment transaction espoused in the monitoring and blunting hypothesis. As mentioned in a previous section, the conceptual relationship between the monitoring and blunting subscales is incongruent with the scoring procedure advocated. The subjective analysis of the interview data directed attention to a number of other limitations of the structural approach used in the MBSS to measure coping behavior in threat. It was concluded that it may be appropriate to incorporate Likert scales into the MBSS to measure the degree of use of each strategy and the respondents' perceptions of the threat intensity, controllability and predictability on each MBSS situation. In addition, it would be of value to measure the individual's flexibility in application from situation to situation using a change score. These measures may more closely match the structure of the MBSS scoring model with the structure implied in the monitoring and blunting hypothesis. Changes as suggested in the scoring procedures may provide data which may facilitate teasing out the specific situational and personal configurations which interact to define behavior and moderate arousal.

Structure of the MBSS

The results of factor analysis on situation by strategy correlations, provides little support for a structure based entirely on 2 strategies (monitoring and blunting). The 4 situations (dentist, hostage, layoff, and airplane) contributed a great deal to response variation. The pattern represented by the absolute values of the coefficients in the situation x strategy correlation matrix indicated that situations are at least as fundamental as traits (Substudy I). This supports the notion of incorporating some measure of the individual's perception of the characteristics of the situations in the MBSS scoring procedures. The suggested measure to obtain some score on the flexibility of application of monitoring and blunting as well as the degree of application may increase the match between the hypothetical and MBSS structure. Future research directed at the construction, evaluation, and testing of more relevant items and situations for the MBSS may further strengthen the structural validity evidence of the MBSS. However, it would seem futile to tackle the suggested modifications to the MBSS before addressing the inconsistency between the hypothesized and the demonstrated relationship between the subscales of the MBSS. In addition the implications of limiting the blunting construct represented in the MBSS to distracting warrants further clarification theoretically and empirically. According to Messick (1989) construct validity incorporates an integration of the degree to which both the empirical evidence and theoretical rationales support the inferences based on the test score.

External Structure

Convergent Validity Evidence

In this research the extent to which the MBSS scores were related to the scores on another series of hypothetical threatening situations was examined. The results indicate that the blunting (distracting) subscale of the MBSS is significantly associated with the total blunting (distracting) score on 8 new, hypothetical, threatening situations (task). The monitoring subscale of the MBSS was not found to be significantly associated with the monitoring scores on the task. This may have been due to the scoring method used on the interview data which resulted in a lack of variability in the monitoring scores. Contrary to the findings of this research, Van Zuuren and Wolfs (1991) found no relationship between either the scores on monitoring or blunting in the MBSS and self-reports of real-life threat experiences. The greater possible range of scores on the task used in this work (i.e., monitoring : 0 to 8; blunting: 0 to 8) compared to the scores on self-reports (monitoring: 0 to 1: blunting: 0 to 1) used by Van Zuuren and Wolfs (1991) may account for the difference in findings for blunting. Alternatively, although the scores on blunting (distracting) may be related when comparing two different self-report methods using hypothetical threat, the MBSS may not predict behavior in real threat. Overall, this work indicates that the blunting (distracting) subscale of the MBSS is reasonably representative of the distracting strategies mentioned in hypothetical threat by the sample studied.

Predictive Validity Evidence

In general it is difficult to integrate the findings of research which have tested aspects of Miller's monitoring and blunting hypothesis using the MBSS. This is due to a lack of consistency in the MBSS scoring procedures and the parameters to measure physiological and psychological arousal. In future work with the MBSS an attempt should be made to use a consistent scoring model. Replication of previous work needs to be done across a number of samples to increase the generalizability of findings. Also more research is required to establish the specific situational conditions in which the MBSS may be predictive of behavior and arousal.

Divergent Validity Evidence

Some divergent validity evidence exists although limited details regarding the studies are available in published literature (for e.g., type A behavior). The results of this study further support the notion that age and gender are not related to MBSS scores. Future research is required to clarify the distinction between scores on the MBSS and scores on measures of socioeconomic status, trait anxiety, and depression.

An Evaluative Judgment

The use of the MBSS has been confined to research. However, important inconsistencies in the underlying hypotheses, concerns related to the content relevance and representativeness, and lack of clear internal structure and definitive evidence of external predictive validity of the MBSS have been pointed out. The merit of using the MBSS for research to increase our understanding of coping with threat is undermined by: the pervasive concerns related to the construct validity, the growing awareness of the complexity of the individual and situational conditions, and the salience of the perceived characteristics of the situation in determining behavior. It may be more appropriate at this level of understanding to take a more exploratory approach to further examine possible individual patterns of information-seeking /avoiding behavior across time and threatening situations. At the very least, inconsistencies within the monitoring and blunting hypothesis in particular need to be addressed before further application of the MBSS is undertaken.

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APPENDIX A

Definitions

Arousal: a dimension of activity or readiness for activity based on the level of sensory excitability (Reber, 1985). Miller (1979a) suggests that physiologic, subjective, and behavioral responses may be used to indicate the extent of arousal.
Physiological: skin conductance [tonic and phasic (specific and nonspecific) responses], heart rate
Subjective: self-report ratings of anxiety and tension
Behavioral: hand clenching, crying, and screaming out (Miller & Mangan, 1983)

Blunting: the extent to which the individual cognitively avoids or transforms threat-relevant information (adapted from Miller, 1988b, p.7)

Calming self-talk: affirmations in which the individual makes positive self-statement such as "I am at peace with myself and I am relaxed as I can be". Here the focus is on reducing arousal as opposed to focusing on the source of arousal.

Cognitive control: a variation of control which refers to the way in which an individual interprets or attaches meaning to a threatening event.

Cognitive Coping Style: the extent to which individuals choose to monitor and distract themselves when faced with threatening events (Miller, 1980a, p. 156). Cognitive coping style refers to 'the way in which individuals cognitively process information as a means of reducing stress' (Miller & Mangan, 1983, p231).

Cognitive Informational Style: the extent to which the individual chooses to monitor and blunt in a threatening situation.

Control: "one can do something about an aversive event" (Miller, 1980a, p. 146). "The individual's perception that he or she can execute (or has the potential to execute) some action that changes an aversive stimulus" (Miller, 1992, p.3).

Coping: "cognitive and behavioral efforts to master, reduce, or tolerate the internal and /or external demands that are created by the stressful transaction" (Folkman, 1984, p. 843).

Denial: the negation of something in word or act (Lazarus, 1985).

Detachment: to separate affect from the rest of one’s thinking and to concentrate on the mechanical aspects of the situation.

Distraction Imagery: a relaxation technique involving the creation of images of scenes that are associated with relaxation (Avants, Margolin & Salovey, 1990).

Duration: "how long a stressful event persists" (Lazarus & Folkman, 1984, p. 98)

Event: an "occurrence, a phenomenon, a slice of reality, indeed anything that happens that has a beginning and an end and can be specified in terms of change" (Reber, 1985).

Focused Imagery: a relaxation technique in which the individual is asked to imagine the events leading to a typical stressor, reinterpreting cues as indications that they are in control and visualizing they are experiencing a sense of strength, determination and energy. Finally, the individual is asked to imagine enjoying the success of overcoming the stressor. (Avants, Margolin & Salovey, 1990).

Habituation: the gradual elimination of superfluous activity in learning (Reber, 1985)

Imminence: how much time there is before an event occurs. Increasing amounts of time is associated with lesser anticipatory arousal because the individual is more likely able to activate coping mechanisms (Lazarus & Folkman, 1984, p. 92).

Instrumental response: a response that modifies a threatening event or the controlling response (Miller, 1980b).

Intellectualization: the "utilization of reasoning as a defence against confrontation with an objectionable impulse or affect. (McFarland & Thomas, 1991).

Joking: refers to an avoidance technique used to keep further information that might be disruptive out of one’s frame of reference (Mechanic, 1985).

Monitoring: "the extent to which the individual is alert for and sensitized to threat-relevant information" (Miller, 1988b, p. 7).

Predictability: the condition that "one can know something about the event, whether or not one can do anything about it" (Miller, 1980a, p. 147). The acquisition of threat-relevant information increases predictability of the threat event.
Miller (1981) defines two different types of predictability: contingency predictability and what-kind-of-event predictability. The former refers to knowledge about when and under what circumstances an event will occur. The latter refers to knowledge about what the event will be like and what effects it will have.

Procedural information: information given prior to a threatening medical or surgical intervention designed to inform the patient about the procedural sequence (Gatusso, Litt, & Fitzgerald, 1992; Watkins, Weaver, & Odegaard, 1986).

Procedural sensory information: information given prior to a threatening medical or surgical intervention designed to inform patients of the procedural sequence and the expected sensations (Miller & Mangan, 1983; Watkins, Weaver, & Odegaard, 1986).

Probability: the mathematical likelihood of the threatening event occurring (Miller, 1979b; 1987).

Progressive muscle relaxation: a relaxation technique involving alternately tensing and relaxing 16 major muscle groups. Each muscle group is tensed and relaxed twice (Avant, Margolin, & Salovey, 1990).

Rational statements: to focus on the positive outcome of a threatening situation. Efran, Chorney, Ascher, & Lukens (1989) use rational statement training as a condition consistent with blunters' desire to avoid focusing on the threat. For example, volunteers were trained to say to themselves, "One of the good things about this experience is that it might help psychologists learn more about people" (Beers & Karoly, 1979 cited in Efran et al., 1989).

Reinterpretation: diminishing threat by changing the meaning of the situation without changing the threat objectively (Lazarus's definition of reappraisal: Lazarus & Folkman, 1984).
Reframing a threatening event in a more positive light: e.g., "Think of the pain as an interesting tingling sensation" (Miller, 1989a, p. 16)

Relaxation: an exercise designed to lower emotional arousal (Reber, 1985). Relaxation would include exercises such as deep breathing in which one attempts to focus on the process of breathing as opposed to the source of emotional arousal. Relaxation would also involve progressive muscle relaxation where the individual concentrates on tensing and relaxing muscle groups (also see progressive muscle relaxation and relaxation training).
Gatusso, Litt & Fitzgerald (1992) included both deep muscle relaxation and meditation in their definition of relaxation training. Lerman and her colleagues (1990) operationalized relaxation training as both deep breathing and progressive muscle relaxation exercises.

Relevance: the extent to which a situation is perceived to be typical of situations that may confront the individual in context

Self-efficacy enhancement: teaching people a technique to reduce arousal and providing them with reinforcement through demonstrating that their application of the technique actually does reduce their arousal

Situation: a "complex whole representing the multiple stimulus patterns, events, objects, persons and affective tone existing at some point in time" (Reber, 1985).

Stress: "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p. 19).

Threat: concerns harms or losses that have not yet taken place but are anticipated (Lazarus & Folkman, 1984)

Threat intensity: the intensity of threat is determined by the probability, level, duration. Threat intensity is increased as the probability increases, the duration is lengthened and threat is imminent (Miller, 1988b).

Transform: a cognitive strategy in which attention is focused on the benign less negative aspects of threat (Miller & Green, 1985)

APPENDIX B

Instructional Package: MBSS Group

MBSS INFORMATIONAL PACKAGE

INSTRUCTIONS

1)This package includes an abstract of the study, a consent form, the Miller Behavioral Style Scale, and a General Information Form. It will take approximately 20 minutes to read this material.

2)Read the abstract of the study entitled "Validation of the Miller Behavioral Style Scale"

3)Read the consent form and decide whether or not you would be willing to enter the study
If you consent to enter the study please sign the consent indicating which portion of the study you are willing to enter:

i) **the first phase** involves completing the Miller Behavioral Style Scale and a General Information Sheet which is included in this package
ii) **the second phase** would be conducted at a later time on campus and involves reviewing an additional series of 8 imaginary threatening situations and undergoing a tape recorded interview (will take approximately 90 minutes)

Your choices are:
Volunteer to enter the **first phase** of the study
or
Volunteer to enter **both phases** of the study

4) If you do not wish to enter the study **Please return the MBSS Informational Package to 3-104 Education North in the sealed envelope included in the package**

5) If you agree to enter the study complete the Miller Behavioral Style Scale **then go on to item 6**

6) Complete the General Information Form

7) Please return **within 10 days** the following in the enclosed self-addressed sealed envelope to **C Ross, MBSS Study, 3-104, Education North, University of Alberta :**

i) the **completed** Miller Behavioral Style Scale
ii) the **completed** General Information Form
iii) the **signed** consent form

THE MILLER BEHAVIORAL STYLE SCALE AND FOLLOW UP INTERVIEWS
Consent Form

University of Alberta, Department of Educational Psychology
Project Title: Validation of the Miller Behavioral Style Scale
Investigator: Carolyn JM Ross

I______________________(print name) have had the study entitled 'Validation of the Miller Behavioral Style Scale' explained to me verbally by Carolyn Ross. I understand that the purpose of this study is to determine the extent to which the Miller Behavioral Style Scale can predict the coping strategies that individuals use in a threatening event. I understand that I will be required to complete the Miller Behavioral Style Scale which presents 4 threatening events that could happen to me and possible activities that I might undertake to deal with the situations. I am required to indicate with a check mark those activities that I would likely undertake in the situations. In addition, I may be asked to enter a second phase of the study in which I would be required to review another series of hypothetically threatening situations and discuss what I would do in those events. Interviews conducted in the second phase of the study would be tape recorded and would take approximately 90 minutes to complete.

I understand that it is possible that the review of the situations may be a tension-evoking experience for me. In the event that I experience intense emotional reactions as a result of reviewing the threatening situations, student counselling services will be available to help me deal with my feelings.

I understand that whether or not I participate in this study will not influence my grade in this course in any way. I understand that if I do agree to participate in the study I may withdraw from the study at any time. Also, I understand that any information which may identify me will be kept only by the researcher and will be destroyed at the end of the study. I understand that I will remain anonymous in any research report that may result from this study.

I realize that there may be no direct benefit to me for participating in this study, but that the results of this study may benefit the field of psychology in terms of understanding how people cope with threatening situations.

I agree to take part as a volunteer in the first phase in which I would be required to complete the Miller Behavioral Style Scale.

Signature:_____________________ Date:_____________

I agree to take part as a volunteer in the second phase in which I would be interviewed by the investigator.

Signature:____________________ Date:______________

ABSTRACT

Miller suggests that the Miller Behavioral Style Scale (MBSS) allow one to predict the extent to which an individual will use information seeking and information avoiding strategies in a threatening situation. This implies that there is some element of consistency in coping behavior which Miller refers to as cognitive coping style. The possibility that individuals may engage in consistent pattern of information seeking and or information avoiding behavior in threatening events generates a number of questions which have implications for research and practice in education and in the health care field. If there is such a thing as 'cognitive coping style', which cognitive coping style results in the best outcomes of threatening events? Does cognitive coping style effect coping behavior in specific types of threatening situations or across all types of threatening situations? Can individuals be taught more effective application of coping strategies? An essential initial step in research related to the implications of cognitive coping style would be to provide evidence of a test that accurately identifies an individual's cognitive coping style. Unfortunately, to date, there is limited evidence to suggest that the MBSS measures cognitive coping style. The purpose of this study is to clarify the extent to which the MBSS measures cognitive coping style. A multi-phased research project has been designed to determine the extent to which the MBSS measures cognitive coping style. The initial phase of the study involves the development and testing of a written set of situations that are typically threatening to university students. Another phase of the study will involve the administration of the MBSS to a large sample of students. The final phase of the study will involve interviewing a select sample of students from those students who have completed the MBSS. Those students involved in the final phase of the study will be interviewed to determine the coping strategies that they would use given the threatening situations developed by other students. A comparison of the strategies suggested in the interviews with the MBSS scores will allow the researcher to determine the extent to which the MBSS predicts coping strategies. The results of this study will determine the role that the MBSS may play in future research of the impact that cognitive coping style may have on outcomes of exposure to threatening situations.

GENERAL INFORMATION FORM

1. Name: ______________________ Age ____ Gender ______
2. Current Address: ____________________ Phone ________
3. Permanent address and phone (if differs from above:
   ____
4. Year of program of study: 1 __ 2 __ 3 __ 4 __
5. Faculty _________________
6. What is your highest level of education?

University (incomplete) __	Diploma/certificate __
Bachelor's degree __	Professional degree __
Master's degree __	Doctorate __

7. What is your religion? (circle your response, or describe below)

Roman Catholic; Ukrainian Catholic; United Church; Pentecostal; Jehovah's Witnesses; Anglican; Presbyterian; Mennonite; Lutheran; Salvation Army; Baptist; Islam; Greek Orthodox; Jewish; No religion; Other (specify) ____________

8. To which ethnic or cultural group did you or your ancestors belong on first coming to this continent? [Circle the appropriate numbers(s) or specify]:

1 French 2 English 3 Irish 4 Scottish 5 German 6 Italian
7 Ukrainian 8 Dutch 9 Polish 10 Jewish 11 Chinese
Native Peoples: 12 Inuit 13 Status or registered Indian
14 Non-status Indian 15 Metis Other (specify) ______________

9. How frequently do you attend church?
   Never or almost never ___
   On religious holidays (eg. Christmas) ___
   Once per month ___
   On a weekly basis ___

10. How many years have you lived in Alberta? ____ years.

THANK YOU FOR YOUR ASSISTANCE WITH THIS RESEARCH

APPENDIX C

Instructional Package: Situation Development

This package includes instructions, an abstract of the study, a consent form, and a General Information Form. It will take approximately 2 hours to complete.

INSTRUCTIONS

Try to imagine at least four or more threatening situations that you might encounter. Each of these threatening situations could result in either physical and/or psychological harm (embarrassment, anxiety, loss etc.) to you.

The four or more situations should include at least one of each of the following:

1) a situation which you can know something about (in addition to the fact that it will occur) but you can do little to avoid or reduce the potential harm to you;

2) a situation which you can know nothing about except that it will occur and that you will be able to do little to avoid or reduce the potential harm to you;

3) a situation which you can know or learn something about (in addition to the fact that it will occur) and can do something to limit the potential harm to you;

4) a situation which you can know nothing about except that it will occur and you will be able to do something about it to reduce the potential harm to you.

Please return **within 10 days** the following in the enclosed self-addressed sealed envelope to **C Ross, MBSS Study, 3-104, Education North, University of Alberta :**
- i) the **completed** General Information Form
- ii) the **signed** consent form

The researcher will contact you by phone to arrange a meeting of those involved with the development of threatening situations

Note: Appendix C does not include an abstract or General Information Form (Refer to Appendix B)

The Construction of Hypothetical Threatening Situations
Consent Form

University of Alberta, Department of Educational Psychology
Project Title: Validation of the Miller Behavioral Style Scale
Investigator: Carolyn JM Ross

I______________________(print name) have had the study entitled 'Validation of the Miller Behavioral Style Scale' explained to me verbally by Carolyn Ross. I understand that the purpose of this study is to determine the extent to which the Miller Behavioral Style Scale is a valid predictor of information-seeking/avoiding strategies that individuals use in threatening events. I understand that I am one of six students who is being asked to participate in an initial phase of the study which requires the construction of hypothetical threatening situations. Initially I will be required to construct at least four hypothetical threatening situations independently. About 10 days later I will be required to meet with the investigator and the six other students involved with the construction of threatening situations. The purpose of the meeting with the investigator and the six other students is to determine which of the constructed situations best meet the needs of the study. It is anticipated that it will take approximately 2 hours to construct the situations independently and approximately 3 hours to reach a consensus about the best hypothetical situations during the group meeting.

It is possible that the task of generating threatening situations may be a tension-evoking experience for me. In the event that I experience intense emotional reactions as a result of my attempts to generate threatening situations, student counselling services will be available to help me deal with my feelings.

I understand that whether or not I agree to participate in this study will not influence my grade point in this course. I understand that if I do agree to participate in the study I may withdraw from the study at any time without penalty. Also, I understand that any information which may identify me will be kept only by the researcher and will be destroyed at the end of the study. I understand that I will remain anonymous in any research report that may result from this study.

I realize that there may be no direct benefit to me for participating in this study, but that the results of this study may benefit the field of psychology in terms of understanding how people cope with threatening situations.

I agree to take part as a volunteer in the construction of hypothetical threatening situations.

Signature:____________________ Date:__________

APPENDIX D

Instructional Package: Task Evaluation

INSTRUCTIONS

1) This package includes an abstract of the study, a consent form, a General Information Form and a questionnaire (The Task Evaluation Questionnaire). It will take approximately 50 minutes to complete this package.

2) Read the abstract of the study entitled "Validation of the Miller Behavioral Style Scale"

3) Read the consent form and decide whether or not you would be willing to enter the study
If you consent to enter the study please sign the consent.

4) If you do not wish to enter the study **Please return the Task Evaluation Package to 3-104 Education North.**

5) If you agree to enter the study complete consent form, The General Information Form, and The Task Evaluation Questionnaire.

6) Please return **within 10 days** the following in the enclosed self- addressed sealed envelope to **C Ross, MBSS Study, 3-104, Education North, University of Alberta :**
    i) the **completed** Task Evaluation Questionnaire
    ii) the **completed** General Information Form
    iii) the **signed** consent form

Note: Appendix D does not include an abstract or the General Information Form (Refer to Appendix B)

The Evaluation of Hypothetical Threatening Situations

Consent Form

University of Alberta, Department of Educational Psychology
Project Title: Validation of the Miller Behavioral Style Scale
Investigator: Carolyn JM Ross

I ______________________(print name) have had the study entitled 'Validation of the Miller Behavioral Style Scale' explained to me verbally by Carolyn Ross. I understand that the purpose of this study is to determine the extent to which the Miller Behavioral Style Scale is a valid predictor of coping strategies that individuals use in threatening events. I am being asked to participate in an initial phase of the study which involves the evaluation of 21 imaginary threatening situations. I will be given a questionnaire which includes a description of 21 imaginary threatening situations. I will be required to read each of the situations and then, using a 5 point scale, rate the threatening situations on a number of characteristics. It is expected that it will take about 50 minutes to complete the questionnaire.

It is possible that the task of reviewing the imaginary threatening situations may be a tension-evoking experience for me. In the event that I experience intense emotional reactions as a result of my reviewing the threatening situations, student counselling services will be available to help me deal with my feelings.

I understand that whether or not I agree to participate in this study will not influence my grade in this class in any way. Should I enter the study, any information which may identify me will be kept only by the researcher and will be destroyed at the end of the study. I will remain anonymous in any research report that may result from this study.

I realize that there may be no direct benefit to me for participating in this study, but that the results of this study may benefit the field of psychology in terms of understanding how people cope with threatening situations.

I agree to take part as a volunteer in the completion of a questionnaire about a series of imaginary and threatening situations.

Signature:____________________ Date:__________

TASK EVALUATION QUESTIONNAIRE

Please read each of the imaginary situations and complete the questions for each of the situations. For each of the situations, try to imagine that you are actually experiencing the situation and respond to five questions related to your impressions about the situation.
Indicate your answer by circling the number which most closely agrees with your answer (1= not at all, 2 = somewhat low, 3= neither high or low, 4= somewhat high and 5= very high)
Threat is defined as anticipated or expected harm or loss which is either psychological or physical in nature.

SAMPLE

1. Vividly imagine that you are in an elevator with three other people when the elevator jolts to a stop between two floors. After 2 to 3 minutes the elevator suddenly drops about 4 feet and stops again.

How threatening is this situation to you? (1,2,3,4,5)

Briefly explain why you responded as you did.

How easy is it to imagine yourself in this situation?

(1,2,3,4,5)

How controllable is this situation? (1,2,3,4,5)

How predictable is this situation? (1,2,3,4,5)

The last question in the form asked for general comments: 'Further comments regarding the imaginary threatening situations.'

Note: In the interest of space only the 21 threatening situations included in the Task Evaluation Questionnaire are described.

THREATENING SITUATIONS

1. Vividly imagine that you are in an elevator with three other people when the elevator jolts to a stop between two floors. After 2 to 3 minutes the elevator suddenly drops about 4 feet and stops again.

2. Vividly imagine that you are to give a 20 minute talk to 25 people who are experts on the topic you will be addressing. You feel anxious about your presentation.

3. Vividly imagine that you have recently donated blood at the Red Cross Blood Bank. A public health nurse from the bank has just notified you that your screening test for the aids virus is positive (you are carrying the virus).

4. Vividly imagine that you and your friend are walking down a street at 11 pm when 3 youths with knives surround you.

5. Vividly imagine that it is 10 pm and you are at home alone when you hear a window break in the next room.

6. Vividly imagine that there has been an airplane crash. A loved one was on that flight. Although you know that some have survived, it will be 2 hours before you will receive official information regarding the survivors. You have been asked to await further word at home.

7. Vividly imagine that you have 4 important assignments to complete by the end of next week. It is very important to you that you do well in these assignments but you fear that you do not have enough time to deal with them.

8. Vividly imagine that you are on an airplane which has been unexpectedly delayed. You fear that you will miss a connection. This will mean that you may lose an opportunity to visit a loved one whom you are anxious to see.

9. Vividly imagine that you have to attend a social function this evening. You do not know many of the people who will be attending this event. You fear that when you arrive you will not see anyone you know and as a result you will feel awkward and embarrassed.

10. Vividly imagine that you have been in contact with a fatal disease and are awaiting the results of a test to determine if you have contracted the disease.

11. Vividly imagine that you have an important job interview scheduled for tomorrow morning. The interview will be conducted by a panel of eight people. It is very important to you that the interview goes well for you.

12. Vividly imagine that a loved one is fatally ill with cancer. It is not likely that this loved on will live longer than 2 months.

13. Vividly imagine that you have just written an exam which you thought was difficult. It is important to you in terms of your future plans that you receive a good grade on this exam. Marks will be posted tomorrow.

14. Vividly imagine that you have been asked to meet with the dean and one of your professors regarding a charge of plagiarism associated with a recent paper.Although you believe you are innocent the charge has frightened you. The meeting has been scheduled for the end of the week.

15. Vividly imagine that you have an unexpected expense this month. You are afraid that you will not be able to pay all of your bills.

16. Vividly imagine that you and a friend are stranded in a car in the country late at night. Earlier you had honked your horn at a car which had past you under dangerous conditions. That same car has just passed you again and has stopped a few yards in front of you. Four men who appear to be drunk and hostile get out of their car.

17. Vividly imagine that you have an exam tomorrow morning that you do not feel prepared for. It is essential to you that you maintain a good grade point average in order to meet your career goals. You feel anxious about the exam.

18. Vividly imagine that you are afraid of the dentist and have to get some dental work done.

19. Vividly imagine that you are being held hostage by a group of armed terrorists in a public building.

20. Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about layoffs has been made and will be announced in several days.

21. Vividly imagine that you are on an airplane, 30 minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced that all is well.

APPENDIX E

Interview Responses: Elevator Situation

Monitoring Responses:

12.100
Environment: 'The first thing I would do is to see where the phone was. If there was an emergency phone.'

13.258
Social/Self: 'Does anyone here know anything about elevators?'
'I'm sure that anything that I could possibly think of would be running through my mind in that vein at that particular moment. You know, what's the worst that could happen here?'
'I know for myself, I would want to see the feelings of the rest of the group. If somebody is being really calm about this, try to draw from that and calm down myself.'
'Try to figure out a way out of here.'

15.41
Self: 'I can just think of , what would I do to get us out of this ..to help us to deal with it in the interim.'

16.94
Self: 'I would try to do some quick problem solving on how to get out of here.'
'Maybe they could think of anything to do .'
Environment: 'I would be waiting to see, ummm...the elevator started functioning properly again or if somebody comes to our rescue.'
Social: 'I can imagine all of us would be sharing similar experiences that we had, that usually happens in that kind of situation, and most of us got through them alive so that would sort of...as a proof of could make us more optimistic of the outcomes of the situation.'

17.226
Social:'I would be looking at the other people trying to figure out what is going on.'
'You would be talking to the other people about the situation. Asking them, you know, "Well if you have any ideas what we can do?" '

18.66
Self: 'Perhaps I would be thinking what will happen to this elevator or why it happened.'

19.98
Social:'I would probably want a conversation to start up regarding umm, you know, the elevator and what we could do. How we are going to get out of (the) elevator.'

20.12
Environment:'See if there is any way of gettin out..'

21.79
Environment: 'We would all be holding our breaths, just waiting to see what would happen next and we wouldn't try and move.

22.93
Environment: 'Look for alternative ways out. Or is there a phone or like put our ideas together as to how we are going to cope with this. '
Social:'Maybe somebody has lived through it before. And maybe they will have experience to share or whatever.'

23.106
Environment: 'I may look for a way out.'

24.99
Self: 'I would be thinking through what I would do if it dropped another few feet.'

Social: '...talking about it with the other people in the elevator. Maybe they would have an idea of what to do but I certainly wouldn't know what to do.'

27.89
Social: 'I would probably look at the other people and just sort of find out if they knew what was going on.'
'Watching ...are they finding this upsetting. At first, I would talk to them. Like if they didn't seem concerned, like I would think that it can't be that serious.'

Environment: '..you want to have a certain amount of sensitivity to what is going on. You would be watching and listening.'

28.146
Social: 'Probably (talk to others) about the situation we were in. And if they could think of anything to do.'

29.208
Social: 'Trying to get a hold of somebody and saying "What is going on?"

30.259

Self: 'I would think physically about all of the things that I could do to make me be the survivor, like lying on the ground rather than standing up, looking for any padding, cushioning, anything that I could alert the authority who ran the building. I would look for every escape...'

31.155
Self: 'Think about how to get out of this situation.'
32.158
Self/Social:'...wandering why it's, this thing had stopped and wandering what happened. If there is a power cut or ummm, you know. I guess that is all that we would talk about. What like caused the disturbance and ummm..then we would probably go, you know, how they would help us or stuff like that.'

33.23
Self/Social: 'I would probably wander what happened first and look to see what the other three peoples' reactions are before I decide what my own reaction should be.'

'I would start thinking about how I am going to get out of there, you know.'

34.5
Social: 'I guess I would say, "How many people do you hear ever get killed in an elevator?" '

35.229
Environment: 'Look(ed) at all of the numbers.... like to see where we are stuck.'

36.183
Environment: '(I would be) impatiently waiting, saying, "Hurry, hurry", because sometimes I know that it takes them time to respond.'

'Probably minutes would seem like hours being confined.'

37.3
Environment: 'You start looking for a way out.'

Social: 'Talk to the other people and get to know them pretty quickly and see what kind of ideas they have got.'

38.270
Social: 'I certainly would ask if anybody knows what we should do ....if anybody else had any good ideas.'

39.232
Environment: 'I would look to see what I could use to break my fall.'

Self: 'I would try to figure out ways to deal with the problem and do something about it, not just sit there.'

40.236
Social: 'Phone to find out what actually had happened .'

41.80
Environment: 'I would look for a way to get out of there.'

43.101
Social: 'I would probably ask the three other people what they think about this.'

44.149
Environment: 'Probably look around to see what we could find to ring for help.'
'See if there was an escape door.'
45.8

Self: 'People have assured me that in modern elevators, the chances of cables breaking are between zero and nil. Apparently there are three to eight different sets of cables that all counterbalance each other. I don't understand all of it but it certainly makes me feel better because I have been caught in an elevator for a few minutes at time before.
'I would think that there is a building superintendent somewhere who is going to notice that one of the elevators is not working.'

46.63
Self: 'With everybody jumping up and down in the elevator...it probably isn't going to help matters.'

47.202
Social: 'Have a discussion with other people in there as to what they thought was the best plan of event or best action to take.

48.91
Environment: 'I might try and get the roof off to see where, you know, so you could see where you actually were.'

Social: 'If nobody else does anything, then you might be hesitant to do anything, just because maybe they had been in this situation before and the elevator has done this before and it will fix itself..'

49.48
Social: 'Ask if anyone had been in a similar situation.'

50.211
Social: 'You immediately start making small talk to these

people, "So what do you think is going on? Does anyone know if this happens all of the time?" '

51.30
Self/Social: 'I work at Nait and this happens all of the time. I would try and make the other people feel better. Because if anything did happen, it would just be easier to deal with calm people.'

52.201
Environment: 'See if there is a panel in the roof that we can crawl through or whatever.'

53.75
Social: '..judge (ing) the reactions on peoples' faces.'

Self: 'I actually imagine the mechanics of the elevator, the actual system and that's usually quite reassuring.'
'(I would think) If I am in a moving object and I jump at the last precise second, do I actually change my relative speed?'

54.127
Self: '..I have been in so many accident situations, that I know the first thing that people do in a group is panic.
I would probably try and reason with people that panic is not our best option at this point because I am going to assume that we are going to be stuck in that elevator for some time.
I am going to be very afraid, very anxious and fearful but I don't want to panic and I don't want other people to panic around me....
Environment: 'The best thing we can do for ourselves is not to panic and ..listen carefully to whatever instructions we get and to follow those.'

55.156
Social: 'You know, and then start talking to the people in the elevator. That is what I would do. Kind of, I don't know, make sure that I wasn't the only one that was feeling nervous.'

56.51
Self: 'My first reaction can be, "Can I get out of this elevator?"
Social: '..you kind of do that thinking where you look at the people around you through the corner of your eyes to see if they sort of noticed anything, or see how worried they are.'
Self: 'You would start thinking that, "Have I ever heard of

any people dying on elevator stories?" '

59.128
Self: 'Maybe we should take off our coats and sit down, you know. (And) if it starts to fall, which happened to me on a separate occasion in Vancouver, a long, long, time ago, I thought I was going to die. I mean I was on this thing and then I thought "Ah..what do you do?" I thought, "Well, you know, if I sit on the floor will it, you know, jar my fall or what?" '

'I would be thinking, if worse comes to worse, you know that there are people that monitor these things and they will come looking for you and ...'

60.216
Environment: 'I think (it) would seem like forever.'

Social: 'Probably asking everybody, "What do you think?" See if anybody else knows what is going on.'

Blunting Responses:

13.258
Self: '..I try to a, just pick a spot, a spot on a wall. It could be a light switch, it could be the corner, it could be just the blank wall. Still trying to control my breathing, but just focusing on that rather than everything else that's going around. The white light switch, that's all that I see in my vision, that's all that I think about, and try to get away from everything else, even just for a couple of seconds.'
Self: 'One that seems to work the best for me is just taking a deep breath and holding it for 3 or 4 seconds and telling yourself to hold it...you know for..and telling inhale slowly, talk to yourself, inhale slowly, inhale slowly. Hold it, hold it for as long as I inhale it.'

17.226
Social: 'Try to alleviate fears, their fears, your own and stuff. Talk to them about anything. Get your mind off of it somehow if you can.'

18.66
Social: 'Talking with the people. (About) Anything. If I don't know them, I will ask them for names. Where are they from? Anything like that, just to know each other and talk.'

21.79
Social: 'And I would say, "I am R". And then, I would get everyone to introduce their names so that we would all know who each was. And then I would try, by taking their mind off things, asking them, ummm, I am sure that help is coming along the way. I think that we should pass the time away and umm and talk about something. So, umm..what kind of hobbies do you do?'

24.99
Self: ' (Calm myself by) Not thinking about dying.'

26.132
Social: 'You would probably start to share life stories.'
'(Share stories about) Good times and things like that. Take your mind off of it , I guess. People are trying to help each other keep their minds off of it.'

27.89
Self: 'Probably try and think about something else...or maybe talk about something completely different. You know, conversation about the snow or something like that.'

31.155
Social: 'Keep calm, and I don't know, ask them about themselves. Get them talking about themselves. That always helps calm people down. Take their mind off of it. Talk about something else.'

37.3
Self: 'Do my breathing.'

39.232
Social: 'Some people, possibly myself although I don't think so, would be getting panicky, so you would have to deal with that. I could imagine myself comforting others, more than them comforting me. But definitely if I was in there very long, I think I to would start sharing, you know, tell them about my wife, tell them about my kids and that type of thing.
'You know, get them thinking about something besides what is happening.'

41.80
Social: 'I would start talking about something not completely different. I would say, "Did you see Seinfield last night on TV.?" You know like change the focus of it so that you take it away from the anxiety.'

Self: 'There is no point in dwelling on it because I am just going to produce anxiety in myself. I am just going to make it just that much harder for it to happen to me. So, ah, it is kind of like, think about something else. You know, what you did in the morning or what you saw on TV.'

46.63
Self: '(once) We have communicated with the outside, (is) the biggest part of the emergency (is) our own feelings.'
'Any thoughts that it can't be done or thought that we are all going to die or those sorts of things, you leave off.
47.202

Social: 'Probably talk with the other people. (Talk about) anything that anybody would want to talk about rather than sit there and worry about it, I would much rather have a discussion with someone else. Talk about other things.'

48.91
Self/Social: 'I think maybe breathing deeply or trying to talk to the other people and maybe...If nothing else try and crack a few jokes with them just to, you know, just to get yourself laughing or get someone else laughing. Just so that you are not thinking about the situation at hand.

'Maybe trying to imagine myself outside the situation, like you know maybe just down on the street or something.'

50.211
Social: 'Again just probably keep talking to the other people in the elevator. Probably the situation but anything about the building or even move on.'

Other Responses:

12.100
'I'd pray...ummm for help to come soon or, pray for even say, the worst consequence of this cable or whatever is wrong..like to minimize the injury. God, help us.'

21.79
'I might try to make a bargain with God. I promise I will go to church if you will just get me out alive.'

24.99
'I guess I would pray..that He would help us and maybe help us thinking about something to do...how we can get out of this safely.'

31.155
'..Pray that it is not going to drop any more before somebody gets you out of there.'

36.183
'I hope it doesn't move again.'

13.258
'Humour is probably the greatest diffuser of tension ever created. Be it, something as simple as "Does anyone here know anything about elevators?" '

15.41
'..So then my concern would be other people's response and perhaps trying (to help) them to deal with their response to the whole thing.'

16.94
'If some people are really having a total nervous breakdown or really anxious or scared ...hum I think I would be I would be paying attention to that and see if there's anything I could do to alleviate their anxiety.'

17.226
'And just by talking to other people. You know, cracking jokes, or whatever (I would calm myself down).'

19.98
'Maybe to bring out some amusement to take away the anxiety of the fall, the initial fall'
'If somebody were to make a joke, you know, about the fall, the drop or something that could make a person laugh (and) would relieve the anxiety about the whole situation.'

21.79
'I think that I would make a joke about it first.'

22.93
'..maybe if somebody is panicking worse than me, I can pull my act together to help them. You know, ummm...that usually works for me, is reaching out to somebody else when they are in need. Takes my mind off my own panic.'

23.106
'..make light of the situation and joke about claustrophobia and things like that.'

28.146
'I would probably tell a joke...say something like " This is a cheap thrill" or something like that.'

30.259
'I think that I would be the clown. If there were a couple of people there, I would be making the jokes.'

34.5
'Try to make light of the situation.'

35.229
'(describing a real experience) We tried to talk and make fun of the situation.'

40.236
'Maybe some of those jokes about, "Gee, I hope there is not a fire."

44.149
'Probably I would come up with some kind of a funny comment. This would sort of relieve the tension.'

46.63
'Rely on my sense of humour a bit. I would say we desperately in need of a repairman.'

49.48
'You might joke about it to begin with. You know, when you are with other people, you might try to make it seem that it is not as bad as it could be or as dangerous I suppose.'

51.30
'I would try and make the other people feel better. Oh, make a joke. (For example) "Got a will?"

52.201
'Probably making a joke about the elevator stopping..'

53.75
'I make jokes. I would say, "We are on the middle elevator are'nt we?" '

59.128
'Well, I usually make jokes. Like I will start joking with other people and say stupid things, they may not even be relevant but I might say something like, "Well, so much for whatever I was going to do after work."

60.216
'If they were really upset, I think that I would try and calm them down to keep myself from freaking.'

Importance of Context:

17.226

'Actually, like I don't think what I would do is ummm is the panel thing (look for panel in ceiling) immediately after we dropped. I would probably would like , wait a while. I mean like I would probably be just kind of looking around. I would be asking people "what is going on?" kind of thing. But depending on the length of time that we are there...once so much time has passed, you know, you are going "This is not normal". Then you would be looking at the panel and stuff like that.'

23.106

'But after ah...after some time, now I can't say how long that would be, but probably 10 or 15 minutes, I would start looking for some options.'

'I guess things like ah, the time of day, and um, those kinds of things would be important as well...how long I would "sit on it".'

26.132

'Like the stress level would ah, not the stress level but the emotions that you would go through would probably depend on how long you were stuck there. You know, probably there would be a panic. Then, eventually, maybe after three minutes, if you still have not heard from anyone outside and it looks like you are stuck and you know that you have fallen for 4 feet and there is an impending death or whatever, you would probably start to share life stories.'

54.127

'I actually have no idea about the mechanics of an elevator, so I don't know what the potential is of the danger of this elevator or anything like that. So I would be more concerned about my safety, my personal safety.'

55.156

'(It would depend) on the reaction of the other people in the elevator. I mean if they just kind of say...like there is one person who is freaking out, then I mean I probably would respond more and try to tell that person " Oh it's okay.'

'..this would depend on what floor it was on in the first place. I mean if you are on the 28th floor, it is a little different than if you are on the 6th floor.'

APPENDIX F

Interview Responses: Dentist Situation

Monitoring Responses:

T20.12
'I would be thinking, "What is he going to do to me?" '

T33.23
'Check, you know, it has already been determined that , you know, that yes..let's say that I have two cavities and if they are on the same side, he is filling them both that day...'
'(I would) probably say (to my friends) that I take good care of my teeth and don't understand why this is happening to me when, you know, other people don't take as good care, let's say and they don't have any cavities.'

T52.201
'I would talk to the dentist and find out exactly...and try to explore whatever I was afraid of. Again get as much knowledge about it as I could.'

T55.156
'I really think about what he is doing. I have a little mirror and I watch it all.'

T56.51
'I would try and find out exactly what dental work had to be done, whether it was I had to get my wisdom teeth pulled or I had to have a filling or bridge work, or whatever, I would want to know what exactly was going to happen and even try and phone someone else who is a dentist and ask what kinds of procedures I could expect. I mean my big question is going to be, "How much is this going to hurt and can I be knocked out while you are doing it?" '

T59.128
'I might be thinking, "How bad can it be?". Really, I have had my wisdom teeth removed a few years ago. That is as bad as it is going to get and I mean, they put me to sleep to do it and it wasn't really that big of a deal.'

T60.216
'So I am looking for it (the needle). It is a big steel thing. It looks about that big.''

'Just tell him how I felt, that I am afraid of dentists. I don't like pain. I need to know what you are doing, so tell me as you go, so I know what to expect.'

'I would talk to other people about their dentists and stuff, you know, and most of them reassured me that they don't do the kind of things they did when I was a kid.'

Blunting Responses:

T20.17
'I would probably try to talk as much as possible to the dentist about anything.'

'I would try to insist that I be put to sleep or have a pain killer that would make me not feel anything.'

T33.223
'I will be listening to music and just thinking about anything else but what is happening in my mouth.'

'I am not looking at that needle when they put it in.'

T38.270
'I try and think about other things while I am in the chair. I have a very difficult time when they bring me into consciousness with them.'

T52.201
'(I) try to focus my thoughts..you know, probably ten deep breathes..usually calms myself down.'

T56.51
'I would try and really, really try and not pay attention to what he was doing. Keep my mind on absolutely other things, like anything. It wouldn't even have to be something positive, just so long as it was something different.'

'..can I be knocked out while you are doing it?'

T59.128
'I will shut my eyes and just try and relax as much as I possibly can, which isn't much , when I have been in that situation. But you know, make a conscious effort to think, "just relax".'

T60.216
'I don't dwell on it. I will tell myself..I will worry about it when I get there.'

Importance of Context:

55.156

'I have had other dentists that I like better. I don't like this one. So I mean, that makes a difference as well. If it was, like it, depends on what kind of person the dentist is because if that person is, you know, a little more talkative and little more concerned about me as a person, rather than my mouth...then I would feel more comfortable...that person doesn't want to put me through more than he feels necessary because, you know, I mean I am a human being type of thing.'

APPENDIX G

Interview Responses: Hostage Situation

Monitoring Responses:

17.226

'Get an idea of the situation and possibly talk to them (terrorists) about what is going on and stuff like that.'

'I would just make sure that I didn't do anything to set them off.'

'I would just be looking around and stuff like that for possible escape routes or any kind of activity that is going on elsewhere in the building or outside and stuff like that.'

'Try to be really aware of the whole situation.'

18.66

'I have to make like an appraisal of the situation. Do I have the chance to escape?'

'I will be thinking (that) "What will happen here?" '

'I am trying to avoid any risk that ah, might threaten my life.'

23.106

'If they would accept any kind of discussion or would be open to any kind of discussion I think I would want to talk to them about their motives and about what they hoped to accomplish by holding hostages.'

'I would have to read their body language a little bit (to determine if they were open to discussion).'

29.208

'(You would be) wondering "What's gonna actually happen?"

31.155

'Try to think of ways and means to get out of there alive.'

35.229

'... you probably think about "What happens if they blow up the building and you are still in it?" '

39.232

'I would start looking at situations, some way to take control of the situation. I would consider very drastic measures to take , to escape or to take control of the situation.'

'I would start to analyze it just like a problem. The problem is I am on the fifth floor, so how do I get to the ground? How do I get out? (I would) watch for those opportunities.

41.80
'I would evaluate any means that were available to me for escape.'
'I would stay aware of what was going on around me.'
'You know, looking for the door, looking for a way that I can get the weapon away.'

43.101
'I would probably try to hide. That is the first thing I can think of: being small and less noticeable.'

44.149
'Okay if they are going to rape me or whatever, you will have to deal with it and I would maybe say..I don't know, try to maybe plan it in my mind a little bit in case it happened and it wouldn't devastate me.'
'I might also be kind of peeking to see if there was some possible way that if they were all maybe busy doing something in the front, if I knew a way to get out of there. I might look around to see if there was some way to get out while I was sitting quiet.'
'Study them also to see if I can pick up any kind of a clue from them on anything that would be helpful to me.'

50.211
'I would be very quiet. I would be very...trying to see whether ..how many are there. What have they got? Where is the exit? You are looking for clues anywhere. Who are these people? What is going on?
'You just watch. You would try and pick out what was going on. Where is their weapons?'
'Chances are if I saw an opening I might bolt again.'

54.127
'I probably would run through all of the stuff that I have been told about, if you are taken a hostage. Like, don't promise them anything...try and get them to have contact with the outside.'
'I would be doing a lot of observing.'

Blunting Responses:

18.66
'(I would be thinking) like what do I have to do tomorrow or like, you know,living a normal day.'

29.208
'I wouldn't want to be thinking about anything. You don't want to think about the worst case and you don't want to think about...'

'I would be thinking about the most mundane subjects like: "What will I eat tomorrow?" "What will I have for breakfast?" and "I will have a shower when I get home."

35.229
'I would think about, say maybe try and think about the good time I had with them (people you care for).'

'So you kind of have to try and ..like you think about it (the hostage situation) but you try and push it away with the good things because if you think about all the bad things, you kind of go coo coo, you know.'

'Try and talk with the other people too, say the other hostages. Try and get a, you know, try and find out who they are and what they do or whatever and just talk to someone. So you think, like you are not thinking in a way.'

'Try and read a book or magazine or, I don't know, play a game or something.'

41.80
'I am likely to go back into kind of the dental pain exercise, where you are thinking about yourself on a beach in Hawaii and not sitting on the floor of the bank or the floor of the remand center as a hostage.'

Other Responses:

Reinterpretation:

35.229
'Probably you think about positive things but you probably

43.101

'Tell yourself positive things...just trying to think that there is nothing they probably want with me. It's with probably somebody else. Things will be over with'

29.208

'The biggest thing would be to think of, "I am going to get out" and "We will get out"

41.80

'I would concentrate on the positive aspects of the situation, if there were any. Like, you know, "I am not hurt. Everyone is reasonably calm here now. I know that there are people that are outside the situation that are aware of the fact that I am a hostage that are trained in how to handle this kind of situation. I know lots and lots of hostage takings don't result in fatalities. That they are successfully resolved."

44.149
'(tell myself) Look it is going to be okay. Nothing is going to happen. They are going to get what they want. You know, they don't want to hurt you because if they hurt you ummm..they are not going to get what they want.'

Praying/hoping:

43.101
'I would hope that other people don't attract attention to get them (hostages) started up or something like that. I would just hope that everybody else was calm and cool and try's to be and not try to resist or do something like that.'

44.149
'I hope this isn't my time to bo but if it is, then I probably would hope that it would be painless and quick or whatever.'

APPENDIX H

Interview Responses: Layoff Situation

Monitoring Responses:

13.258
'(I'd think that) if I'd been doing good work, then I can't see how I would get anything other than a good evaluation.'
'I realize now that the more people you know, the more kissing up you do, the safer your job.'
'So if you go with the last one hired, the first one hired rule, if someone came in before me, I'm thinking right away, "They're probably gone before I am." '
'It would probably be in my best interest to do some very minimal, very quiet looking around for other work and again, trying to prepare for the worst.'
'(Ask the supervisor) Should I be looking for another job?'

15.41
'Well, first of all, I would say that maybe I could , I don't think that this (getting laid off) is going to happen to me, and part of the reason I don't think that's going to happen is that I think I pay attention to what my job is. First of all whether its an important job to the organization or whether it is not.'

19.98
'I probably would be going over, you know, trying to remember everything in the past year.'
'I would still try to guess what the outcome was going to be.'
'..if I just by comparing and thinking that maybe I am going to be one of the ones let go, I would be looking to see, you know starting to look to see what else there is.'

21.79
'I would talk to other people, the other people who were in that department and ask them what they thought about it.'
'I know what the evaluation was because they have to give a copy of your evaluation. I would pull that evaluation out. (I would) have a look at it and see which areas had been checked off. In talking to other people, I could bring up the topic about evaluations and see what other people thought about them.'
'Maybe I would be considering things like: where else I could go or; what else I could do.'

'Well, a person does know what they have done, as far as their work record goes. So I imagine that I would be thinking about that.'

'Probably (be) talking to the other staff (about) who they thought might be getting the axe.'

'(I would be thinking about) what my financial situation was, how I would cope.'

26.132

'Well I would evaluate myself. I would see if I was performing as well as I could.'

27.89

'I would try and think about who was most likely to get laid off.'

'Try and evaluate what I had done: if I had done anything good or anything bad.'

'I would start thinking about what would happen if I did get laid off.'

30.259

'I would try to ascertain who did have the lowest sales. I would try to get information. Go around and speak to everyone else that I thought would give me accurate information: the supervisor, anyone. Try to find out who had the lowest sales to see what my chances were (of getting laid off).'

'I might consider other options before the drop came.'

32.158

'I would first go over what I have done, in terms of work. I would evaluate myself. I would rate my chances of being laid off.'

'I would ask them (other employees) who they think would get laid off.'

'(I would think about) what I would do if I got laid off.'

34.5

'Probably would gossip with the people at work, you know, about who we thought was going to get laid off or whatever we ended up gossiping about.'

36.183

'I just had my evaluation done, so I probably said, "Well, this was good about the evaluation but this wasn't, you know and this here and this here and I hope that it is not that.'

'But sometimes I would also keep in mind that sometimes evaluations are not it (deciding factor). Because sometimes it is easier to get rid of somebody that is paid more and keep more staff than getting rid of people that get paid less kind of thing.

'I would talk about other too.'

37.3
'Depending on how my evaluation went, I would have a pretty good idea of what to expect.'
'I am going to try and find out from other people if they know.'
40.236
'I would do a self-evaluation and know that I did a good job and that I did the best that I could.'
'I guess it would be preparing for the worst again.'

45.8
'I would go over in my mind all of the good things that I had done in the past year and probably make a list of them on one side, in one column on the page. And then I would probably also, knowing my darker side, on the other side of the page in the second column make a list of all of the things that they might perceive as being reasons to lay you off, you know.'
'I would talk to other people about it.'
'I would sit down and start making plans for the future.'

46.63
'What you could do is you could ask your supervisor what basis they were using to decide who was staying and who was going but that would in all likelihood would just increase your supervisor's stress which they probably don't need anyway. but it wouldn't hurt to have a friendly chat with your supervisor.'

49.48
'Initially you would do a sort of self-evaluation of yourself beforehand.'
'Maybe starting to maybe think about how you are going to deal with the layoff if it does happen to you.'

53.75
'I would look at my bank account. I would look at financial obligations. I would look at the want ads (advertisements). I would plan for being laid off.'
'I might get snoopy at work and try and find my files.'

Blunting Responses:

21.79
'Try and do other things. Keep my mind off it (threat of layoffs) and just wait for that final decision.'

36.183
'I would find other activities to do like just watching TV: an escape. Then I would sometimes try just to sit in a

bath, to relax. The best thing is to go to sleep because then you can't think about it.'

'I might even try having a drink. Calm the nerves because alcohol makes me tired after a couple of drinks I can go out.'

Reinterpretation:

19.98

'I would be looking to see, you know starting to look to see what else is there. Like what am I going to do, you know if I get laid off, just start watching the ads, maybe going to an employment agency and checking out other alternative. Maybe something better would come along anyway.'

'Is this job what I want anyway?'

22.93

'You know with my experiences, that it is not the end of the world and maybe this is an opportunity to really think about what I want to do with my life and look for another job, maybe in a totally different area.

21.79

'I would just want to think things are going to be just fine, you know.'

40.236

'Maybe this is a golden opportunity to move into something better.'

45.8

'I would try a lot of self-talk. I would try to say "Yes, but you have these (alternative) plans and this is what you can do".

46.63

'I guess you would do some self-talk to explain to yourself that it's ah..likely not going to be anything personal and it may have to do with the fact that somebody makes more money or less money than you do is why somebody gets laid off.'

APPENDIX I

Interview Responses: Airplane Situation

Monitoring Responses:

16.94

'I would probably talk with the people around me to see how they feel about it. To see if they think it is dangerous or not.'

'I then, I would try to be quiet and introspective and sort of make plans for my life, for the few minutes that are left.'

24.99

'I think that I would seek out the stewardess, perhaps she would have something to say.'

'Watching what her (stewardess's) actions would be.'

'I might try and locate the doorway in case we land somewhere.'

28.146

'I would probably try and talk to the person sitting beside me about what he thought might be wrong.'

47.202

'I would read on how to, you know, the emergency procedures in a plane, if I assumed that was what was going to happen.'

'If I was travelling with someone or if I had been speaking to the person beside me, I would just talk with them about it.'

48.91

'I think like a lot of the others, I would just want to talk to people about it. You know, I think a lot of people, if you can talk to each other and you know, kind of rationalize their fear. You know, nothing would really be wrong or they would tell us.'

'I would want to talk to the stewardesses, although I don't know how good that would actually do because how much are they really going to tell you. They are not going to tell you something that is going to make the whole crowd break out in massive hysteria.'

'Look out of the window to see if there is anything below, if you had to make a landing, could you make it?'

51.30
'The first thing I do is find out how long of a trip, how long the duration was, so that I knew exactly how long I had to endure this. I would watch the clock definitely.'

Blunting Responses:

16.94
'Try to breathe slowly to calm myself down.'

28.146
'Try and find something to focus my time with. Hopefully I would have a book or something I could read.'

48.91
'I would just want to keep talking because if you talk the time will pass quicker. I think that after you get this situation over with, (talk about) just anything, anything that just come to mind just to keep your mouth going and your mind off of the situation at hand.'